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Representatives of the nineteen Curriculum Study Centers supported by the U.S. Office of Education gathered to share information about what each Center was doing in order to analyze and attack common curricular problems; to consider certain common procedural matters such as the publication and dissemination of their materials; to examine research designs, tests, and testing procedures to draw conclusions about future directions for curriculum evaluation; and to inform interested professions about the accomplishments of the Study Centers.

Included are the summaries of statements made by each of the individual Centers, eleven in English and eight in social studies. Introductory analyses accompany both the group reports. While no two Centers are attacking the same problem or using the same approach, the reports show that there are remarkable similarities in many of their basic ideas. The Centers seem to share a common interest in inductive teaching, sequential learning, evaluation, and teacher-training program, in new curricular subjects and new emphases, and in the newer technical media. All of these matters of common interest are discussed, as is the work of the individual Centers.

This conference report is concluded by a commentary and discussion on the issues raised at the evaluation meeting and on the papers presented by the invited speakers. The problems discussed in these papers are those which arise at many stages of curricular study.

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CURRICULUM DEVELOPMENT AND EVALUATION IN ENGLISH AND SOCIAL STUDIES

A Report on Research Development Conference
for Personnel of
USOE Curriculum Study Centers
in
English and Social Studies

Cooperative Research Project No. F-041

Prepared by

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May 8–9, 1964

CURRICULUM DEVELOPMENT AND EVALUATION IN ENGLISH AND SOCIAL STUDIES

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TABLE OF CONTENTS

I THE CONFERENCE 1

II CURRICULUM DEVELOPMENT AT THE CENTERS FOR ENGLISH - Robert C. Slack 5

Carnegie Institute of Technology - Erwin R. Steinberg 12
Columbia University - Gerald Dykstra 15
Florida State University - Dwight L. Burton 19
University of Georgia - J. W. Richard Lindemann 23
Hunter College - Marjorie B. Smiley 27
University of Illinois - J. N. Hook 31
Indiana University - Edward Jenkinson 34
University of Minnesota - Stanley B. Kegler 38
University of Nebraska - Paul A. Olson 41
Northwestern University - Jean H. Hagstrum 48
University of Oregon - Albert R. Kitzhaber 51
University of Wisconsin - Robert C. Pooley 54

III CURRICULUM DEVELOPMENT AT THE CENTERS FOR SOCIAL STUDIES - Edwin Fenton and John M. Good 57

Carnegie Institute of Technology - Edwin Fenton and John M. Good 63
University of Georgia - Marion J. Rice and Wilfrid C. Bailey .. 66
Harvard University - Donald W. Oliver 69
University of Illinois - Ella C. Leppert 76
University of Minnesota - Edith West 81
Northwestern University - John R. Lee 85
Ohio State University - James R. Shaver 87
Syracuse University - Roy A. Price 89

IV THE ROLE OF THE EVALUATOR IN CURRICULUM RESEARCH - Garlie A. Forehand 95

The Place of Evaluation in a Curriculum Study - Hulda Grobman. 103
The Measure of Behavioral Changes as the Measure of a Curriculum Evaluation - Henry W. Walbesser 119
Tasks of Evaluation in an Experimental Course - Edward J. Furst 133
Innovations in Evaluation for Innovations in Curriculum - J. Thomas Hastings 140

APPENDIX A - List of Attendees 149
APPENDIX B - Conference Program 153

THE CONFERENCE

During May 8-9, 1964, representatives of the nineteen Curriculum Study Centers then being supported by the Cooperative Research Branch of the U. S. Office of Education, eleven in English and eight in social studies, met at Carnegie Institute of Technology.* They gathered for several purposes:

1. to share information about what each was doing in order to
   a. analyze and attack common curricular problems
   b. encourage people at the various Centers to learn of fruitful ideas being tried at other Centers
   c. allow people at the various Centers to learn of and adopt useful materials already developed at other Centers and thus save considerable expenditure of time, energy, and money

2. to consider certain common procedural matters
   a. problems of publishing the materials they develop
   b. establishing Demonstration Centers in order to disseminate their materials and curricula
   c. establishing and maintaining communication among the Centers and the Cooperative Research Branch.

3. to examine the research designs, tests, and testing procedures employed by other curriculum groups in order to draw useful conclusions about future directions for curriculum evaluation.

4. to inform the professions concerned about the goals and accomplishments of the eleven Curriculum Study Centers in English and the eight in social studies.

The list of those who took part is attached as Appendix A; and the program for the meeting is attached as Appendix B.

The participants included: specialists in English and English education; specialists in history, the social sciences, and social studies education; psychometricians; representatives of the National Council of Teachers of English, the Modern Language Association, and the National Council for the

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* A report from a twentieth Center, the Illinois Center in English is included in this volume. Because it was founded after the conference was arranged, this Center was not represented at the meeting being reported on here.

Teaching of Social Studies, as well as the editors of the various journals published by those organizations; representatives of the Cooperative Research Branch of the U. S. Office of Education. As the program shows, the participants met in plenary sessions and in smaller groups, depending upon the topic for discussion. Erwin R. Steinberg chaired the plenary sessions, Robert C. Slack the meetings of representatives of the English Centers, Edwin Fenton the meetings of the social studies Centers, and Garlie A. Forehand the meetings of evaluators. Analyses by Slack, Fenton and Good, and Forehand introduce the appropriate sections.

The Work of the Centers

At the conference, each Center reported on what it was doing. After each report, there was a limited time for questions and discussion. Summaries of the statements made by each of the Centers are included in this report. As the individual reports and the introductory analyses by Slack (English) and Fenton and Good (social studies) show, no two Centers are attacking the same problem or using the same approach. Yet there are remarkable similarities in many of their basic ideas -- not only among the English Centers and among the social studies Centers, but also between the English Centers as a group and the social studies Centers as a group.

Many of the Centers seem to show a common interest, for example, in inductive teaching, in sequential learning by means of a spiral curriculum, in the integrity of the subject matter of the discipline, in careful preparation of materials for teachers and for teacher-training programs, in grouping by ability level, and in evaluation. Similarly, they demonstrate a common interest in new subjects and new emphases: in English, structural linguistics and transformational grammar, rhetoric, mythology, and the techniques of literary criticism; in English and history, non-Western literature and the history of non-Western cultures; in the social studies, political science, economics, anthropology, sociology, and psychology. They also evidence an interest in the newer media: transparencies, kinescopes, tapes, and all the other teaching devices ushered in by the revolution in audio-visual aids made possible by modern technology.

All these matters of common interest were discussed, as was the work of the individual Centers. No attempt is made here, however, to summarize or report formally on the discussions. The significant matters treated are included in the introductory statements of the sections which follow. It is probably fair to say that while several basic problems were analyzed fruitfully and the work of the individual Centers was discussed, the analysis and discussion did not affect the major direction of any of the projects concerned.

Problems of Evaluation

The evaluation meetings were devoted to two kinds of activities: discussing technical and professional problems of evaluation; and hearing and discussing four invited presentations. This report includes a commentary by Forehand on the issues raised in the discussion and on the papers presented by the invited speakers.

Three of the invited papers were based on experience in curriculum development projects at varying stages of development. Grobman discusses problems that have been encountered in one of the most elaborate and widely studied programs -- the development of biology curricula by the American Institute of Biological Sciences. Walbesser reports on evaluatory procedures in several ongoing projects in mathematics and natural sciences. Furst discusses the evaluation activities in a social studies Center just getting under way. Thus, the group discussed problems arising at many stages of curriculum study -- from formulation of objectives to large scale field testing.

Hasting's paper focuses upon a problem common to all evaluation tasks and one of great importance to curriculum development: the problem of developing innovative approaches to measurement for the assessment of novel curriculum goals. Forehand's introductory commentary discusses three issues that arose repeatedly during the discussions: curriculum as an independent variable, the behavioral definition of education objectives, and professional responsibilities of evaluators.

Procedural Problems

Of the procedural matters discussed, the most important was the methods by which the Centers were to publish the materials and the curricula they develop. The problem of publication was first raised in February of 1962 at a meeting of representatives of the Curriculum Study Centers and representatives of the Office of Education in Washington. In the fall of 1963, the Commissioner of Education appointed Roger Shug, Director of the Chicago University Press, as special consultant to advise him on a publication policy. Mr. Shug discussed the draft of his recommendations to the Commissioner with representatives of the Centers at the conference being reported on here, and the representatives were assured that a publication policy would soon be forthcoming. Ten months later, however, it has still not been announced.

Informing the Profession

Sections of this report have already appeared in PMLA (September 1964, Part 2) in an article entitled "Research on the Teaching of English Under Project English," by Erwin R. Steinberg and in ELEMENTARY ENGLISH (November 1964), THE ENGLISH JOURNAL (December 1964), COLLEGE ENGLISH (November 1964) in an article entitled "A Report on Project English," by Robert C. Slack. Other portions of it are scheduled to appear in SOCIAL EDUCATION in an article entitled "Project Social Studies: a Progress Report," by Edwin Fenton and John M. Good. The section on evaluation, however, is available only in this report.

E. R. S.

CURRICULUM DEVELOPMENT AT THE CENTERS FOR ENGLISH

Robert C. Slack

The Conference of Project English Centers contained much to confute possible critics of the program, both those who might fear that Project English is an effort to establish a national curriculum and those who might suspect just the opposite, that its varied approaches and isolated origins can do no more than add further confusion to a general educational chaos.

A brief overview can quickly put to rest the illusion that a single national curriculum will emerge from Project English. The reports of the eleven Centers reveal that each level of the public school program is receiving the careful attention of from four to eight curriculum study Centers. Furthermore, each main area within the subject of English is the concern of many Centers: language study and composition appear prominently in the programs of eight Centers; literature is of major importance in seven of the Centers. All the Centers are pursuing their individual aims with vigor, and all of them are producing curriculum materials consonant with these aims. The following chart illustrates the wide variety of sources providing material for each division of the curriculum:

	Carnegie Tech	Columbia	Florida	Georgia	Hunter	Indiana	Minnesota	Nebraska	Northwestern	Oregon	Wisconsin
LEVELS											
Elementary		x		x				x			x
Junior High			x		x	x	x	x	x	x	x
Senior High	x					x	x	x	x	x	x
AREAS											
Language	x	x	x			x	x	x		x	x
Composition	x		x	x		x		x	x	x	x
Literature -- Reading	x		x		x	x		x		x	x

Obviously, it is illogical to suppose that a single approved pattern is being sought at any grade level or in any area of study. To the contrary, it is apparent that several useful approaches and that many valuable teaching materials will be produced which will offer the schools a wide choice of possibilities -- or (even more devoutly to be wished) a broad set of thoughtfully prepared "models" which individual schools will themselves continue to improve upon.

On the other hand, the diversity of the activities of the Centers should not lead one to believe that they are energetically running in all directions at once, and therefore are making no common progress toward any particular end. As the reports unfolded, it became clear that the several Centers, all working independently, seemed to be making various applications of what at bottom were remarkably similar educational assumptions. It might appear at first glance, for instance, that Columbia's concern with teaching English as a second language to early elementary school children who have come from a wide range of linguistic and cultural backgrounds would have nothing in common with Carnegie Tech's commitment to develop a senior high school program for able college-bound students; but a surprising number of commonly held assumptions emerged. Indeed, one of the noticeable discoveries made at the conference was the high proportion of agreement on fundamental matters that so many of the Centers shared.

Such matters of agreement as did appear suggest the outlines of an educational philosophy that seems to be accepted by (or perhaps partly developed by) the Curriculum Study Centers. It is worth looking into these points of agreement in some detail.

Sequence

One idea in particular seems to underlie the approach of almost every Center. Most of the Centers are committed to designing a three- or six-year sequential program. The very concept of sequence implies the belief that a succession of instructive experiences can be devised which will cause the student to progress to a greater mastery of some aspect of the subject. This belief assumes that learning in English occurs in a progression and that a curriculum may consist essentially of a strategic ordering of tasks to be accomplished or problems to be solved; the ordering will normally proceed from the easy to the difficult, from the simple to the complex.

When we recall that programs in mathematics and in the natural sciences have traditionally embraced the concept of sequence, it is easy to overlook the magnitude of attempting to find an effective sequence in the subject of English. Perhaps we should recall that only five years ago almost all the leading professional organizations related to English issued a statement on the Basic Issues which pointed to the problem of sequence in English as one of the most challenging that faced the profession. Also, when we remember how truly unsequential most English programs have been in the past -- how dependent they have been upon the abilities or the propensities of individual teachers at any grade level, how repetitive and non-progressive so many of them have been -- we are better able to estimate the pioneering effort that most of the Centers are undertaking.

Spiral

As pervasive as the idea of sequence, though perhaps less markedly evident, is the influence of another concept: the spiral approach to learning as advanced by Jerome Bruner in THE PROCESS OF EDUCATION (Cambridge 1960). Most of the Centers -- and some quite explicitly -- are designing curricula which are structured about a few basic concepts. In each instance the concepts express the central philosophy of the whole curriculum; yet they resemble not so much the foundation upon which the curriculum rests as, like the steel skeleton of a skyscraper, the inner structure which defines the shape of the whole and is as essential to the top story as to the base. In the spiral-designed curriculum, as is well known by now, the basic concepts appear throughout the whole -- at the beginning, and over and over again, in more complex form, at every higher stage of the program.

The spiral concept is quite explicitly adhered to in one of the curricula being developed at the Florida Center. It is clear also that the Oregon Center, concerned with the basic concepts of Substance, Structure, and Style, which spiral up through the six-year literature program, is strongly influenced by this pattern of structure. The senior high school program of the Carnegie Tech Center grows out of basic concepts that appear and reappear in every grade level. For instance, this Center rests its whole three-year literature program on the basic concept: "Literature is man's record of what it has been like to be alive, expressed in verbal art forms; it is a record of universal concerns of all mankind, but it is usually modified by the culture pattern in which it appears." Every literature lesson in the three-year program arises out of and may be referred to this fundamental concept, which has suggested the structure of the whole.

The instances given here are ones which most obviously contain a spiral pattern, but almost every Center can be shown to reflect the influence of the spiral approach.

Ability Level

Another assumption that several of the Centers appear to subscribe to is that students of different ability levels should be offered an English program that is designed especially for them. The Center at Indiana University has committed itself directly to that assumption. This Center is developing three English programs: one for the slow learner, one for the average student, and one for the academically talented. The Center at Hunter College is building a special English program for junior high school students whose achievement in English is hampered by environmental and educational disadvantages; for such students they are selecting and creating appropriate readings and related audio-visual aids. The Center at Columbia University is developing materials especially aimed at elementary school children for whom English is a second language. At the other end of the spectrum, the Center at Carnegie Tech is designing a program for able college-bound students, the top twenty per cent of the high-school population. All of these Centers appear to believe that the ideal English program should be shaped by a consideration of the ability of the student taking it.

However, it should be said that not every Center is fully committed to this philosophy. The Center at Oregon explicitly assumes that essentially the same program can serve the needs of eighty-five per cent of the high-school students -- with the qualifications that teachers must remember to expect different levels of accomplishment from students of differing ability, and that some adjustments of the central body of content must be made. The Oregon Center recognizes, of course, that small groups at the extreme ends of the spectrum will probably require special programs.

Thus the question of whether an English program should be markedly adapted to the ability level of the students is under active testing in the Study Centers. It is possible that some convincing evidence can be collected from their experience in the next few years. The majority appear to have held initially the expectation that homogeneous grouping of students is desirable and that an English program particularly suited to the needs of each group is an ideal to be sought after.

Language Study

Many of the Centers manifest a strong interest in new approaches to studying the English language; they are especially concerned with structural linguistics and transformational grammar. The Center at the University of Minnesota has made language study the very heart of its junior-senior high school program. This Center is developing a series of language-centered units and study guides which will supply a core of continuity for the high school English program. The Oregon Center places heavy emphasis upon the study of transformational grammar, plus supplementary study of social levels in language and the history of language. The Nebraska Center has focused attention upon structural and transformational grammar, particularly in its junior high school curriculum. The Center at Carnegie Tech has designed language units including recent approaches, for use in its senior high school program. Both the Indiana and Florida Centers have incorporated new language concepts into their curricula. Although not all of these Centers utterly reject the vocabulary and concepts of traditional grammar, it is clear that the general movement is toward the study of structural and transformational grammars.

Composition and Rhetoric

It is heartening that so many Centers place an important stress upon designing an effective program in composition. The Nebraska Center has organized its whole complex program so that every area of it channels into the overall aim of developing the students' compositional skills. The Center at the University of Georgia is developing curriculum materials related to written composition in the elementary school. The Northwestern Center has undertaken special studies on composition in the high school in an effort to develop a comprehensive philosophy of the compositional process. For these three Centers, composition is the dominant concern; but training in writing is receiving thoughtful attention in almost all programs.

In several of the composition programs, particular stress is laid on a body of skills designated by the term rhetoric. The concept of rhetoric seems to be understood in different ways by different Centers. Indeed, there seems to be a widespread effort to revive old, and to establish new, definitions of rhetoric; and certainly there is an active movement to develop new techniques for relating the study of rhetoric to the student's growth in writing ability.

Teaching Materials

A central activity of ten of the eleven Centers is the production of specific useful teaching materials. These materials take various forms: fully worked out lesson plans, written lectures by specialists on particular units of the courses, exercises for students to do either in class or at home, lists of writing topics plus complete directions for the teacher concerning their use, examinations for units of course work, transparencies for the overhead projector, sound tapes, kinescopes -- in short, every form of teaching aid that can provide in any classroom anywhere the precise sort of instructional experience which the Centers believe is essential if the curricula they have planned is to be presented effectively. In this activity the Project English program as a whole is anything but theoretical. There is a general feeling that the curricular plans must be implemented every step of the way by a full body of concrete classroom materials.

Testing

From the beginning, the Project English program has manifested a strong interest in testing. The initial impetus for this, no doubt, was the need of the Centers to obtain convincing objective evidence that the curricula they designed were truly effective. To this end, most of the Centers have included on their staff a psychologist who is a specialist in evaluation. This area of the evaluator's concern is discussed fully in the section of this report dealing with evaluation. However, since many of the evaluator's activities have involved quite directly the subject-matter staff, some comment on this relationship fittingly belongs here.

Evaluating the English curriculum offers special problems, since both evaluators and subject matter persons agree that new instruments need to be devised to measure accomplishment in English -- particularly accomplishment in many areas that the new programs are aspiring to. If the evaluator is to measure how well the new goals are being achieved, then the subject-matter designers of the curricula must formulate their aims in definite, specific behavioral terms, or in terms close enough to behavioral concepts so that evaluators can work with them. This has proved to be a rare challenge for persons whose discipline is English, but its effect has been salutory. Both the curricula and the tests have benefited from this cooperation.

Certain of the Centers are dependent on testing in order to carry out the programs that they have planned. Possibly the clearest instance of this is supplied by the Center at Indiana University, which is designing programs for the academically talented, for the average, and for the slow-learning student. Obviously, the Center is dependent upon measuring instruments which can accurately determine what group each student belongs in. Another Center that clearly depends upon an effective testing program is that at the University of Florida, where three different English curricula must be evaluated one against the other.

Training of Teachers and Inductive Teaching

It seems to be universally accepted by the Centers that their mission involves more than the creation of curricular materials on paper. They have realized that the plans must be brought to life in the classroom and that the only agent who can accomplish this is the classroom teacher. The Centers accordingly have not only created carefully prepared manuals which advise teachers how to present the materials; they have also sought to involve teachers in the construction of the materials, and some of them have provided demonstrations or even workshops to acquaint a wider group of teachers with the materials. Most of the Centers have a cooperative arrangement with schools in their regions whereby the new curricula are being tried out in actual classes. In these instances, the contact between the staff of the Center and the local teachers is continuous.

There are two sorts of influence which the Centers have had on the teachers. The first is the development of an increased breadth and depth of understanding of the subject matter of English, particularly in literature and in linguistics. Just as significant has been the influence on teaching methods. As has been said earlier, most of the Centers are producing quite specific instructional materials which are designed to give students a strategically patterned series of educational experiences. This process usually assumes that in the classroom the teacher will first expose students to the experience of a body of material (say, a poem or a story or an example of language in action), and then, either by posing a particular problem or by skillfully asking questions, cause the students to work through to a useful understanding of the materials. The order here is important for the student: the conceptualizing comes after the experiencing; what the student learns arises out of his contact with the materials of English. This is the essence of the inductive method of teaching, and it is a method that many of the Centers are encouraging teachers to use in the classroom.

Thus through cooperative work large numbers of teachers are growing in stature and confidence. Many of them are giving in-service training to other teachers in their own or nearby schools. Their influence is already being felt, and it is bound to spread. In the near future, as summer institutes are established for the purpose of making the new curricular materials known to the educational world, more teachers will become involved with the Project English program.

Conclusion

Project English is producing a wide variety of materials for use in every level and area of the public school English curriculum. However, a remarkably cohesive educational philosophy appears to be emerging from the program. Most of the Centers are committed to designing a sequential curriculum containing a spiral approach to learning and modified by a consideration for the ability level of the student who will take it. There is a strong emphasis on new approaches to the study of structure and grammar, as well as a fresh attempt to apply the study of rhetoric to the development of students' writing skill. Testing has come to play an important role in the program, both for purposes of evaluation and as a salutory discipline for the curriculum planners. Almost all of the Centers are producing new teaching materials for direct use in the classroom, and all of the Centers are actively involving public school teachers in their programs.

Thus the force that has been liberated by Project English support is generating an effective and forward-looking influence on the teaching of English in the United States.

REPORTS OF THE ENGLISH CENTERS

Carnegie Institute of Technology
Erwin R. Steinberg, Director

The Curriculum Study Center at Carnegie Institute of Technology is developing and evaluating a program in English for able college-bound students in the senior high school (grades 10 through 12). Four members of Carnegie's English staff and a member of the psychology department are assuming major responsibility for the program. Two of the English professors are teaching one course each in a local high school.

The program includes three summer planning sessions involving English teachers from the participating high schools. The three courses are being planned during these sessions. As each is developed, it is tried and tested in the schools during the following academic year and revised.

Our first summer planning session took place in 1962. Ten teachers from the cooperating high schools, four June graduates of Carnegie Tech who were entering the teaching profession, and the five members of the Carnegie staff of the Center sat down at a big conference table to address ourselves to two problems: setting the goals for the whole three-year curriculum; and designing in detail the tenth-grade course, the first third of the program we were undertaking. In the summer of 1963, a similar group composed of many of the same people designed the eleventh- and twelfth-grade courses.

We see the subject of English as three overlapping areas -- literature, composition, and language. In our first planning discussions, we apportioned the time to be given to each of the areas as follows: sixty per cent of the class periods for instruction in literature, twenty-five per cent of the periods for instruction in composition, and fifteen per cent for instruction in language. We have since come to feel that we must give more time to composition and language.

Further discussion led to agreement that the core of the program should be the literature; that we would build the literary core first and then organize around it and build into it the study of composition and language.

As a working definition of literature, we agreed that "literature is mankind's record, expressed in verbal art form, of what it is like to be alive." We agreed further that the writer of literature deals with universal concerns in every age and every culture, but that he is necessarily affected by the particular time in which he lives and by the particular culture of which he is a member. In our tenth-grade course, therefore, our examination of literature deals heavily with the universal concerns of man; in the eleventh-grade course, with the modification of those universal concerns by one particular cultural pattern; and in the twelfth-grade course, with literary art forms, genres and techniques. Although one of these emphases figures more importantly than the other two in a particular year, all three are considered each year.

In our tenth-grade course we give primary emphasis to the universal concerns of man as they appear in world literature (in translation): love, heroism, human weakness, criticism of social institutions or practices, and the search for wisdom. In our eleventh-grade course we study American literature and give primary emphasis to how it reflects prominent modifications of the American culture pattern from Puritan times to the present. Our treatment of American literature is only roughly historical and looks nothing like the traditional survey. Rather, we focus on important aspects of the American character as they are revealed in our literature -- such aspects as American Puritanism, the American desire to get ahead in the world, American optimism, and American critical realism. In our twelfth-grade course we study primarily English literature and give our major attention to the most sophisticated area of the nature of literature, its character as a verbal art form. Once again, the treatment of literature is roughly historical; this time the focal points are the various literary art forms: the tale, the tragedy, the epic, the satire, the lyric, and so on.

Thus, in each of the three years we look at a different body of literature and look at it from a different point of view. But all of our effort derives from a single common concept of what literature is, and each year builds on what went before. Thus our approach is sequential and progressive.

This approach to the study of literature is textual rather than historical. We strive for depth rather than breadth. Although we try to give our students a sense of the historical flow of the literature they study in the eleventh and twelfth grades, our primary concern is to get them to grapple closely with certain major works of literature. Thus our teachers do no lecturing. The approach to each work is inductive. We deal, furthermore, with whole works, or major sections of works, not with snippets.

Our composition program is similarly sequential and cumulative. We see writing as a three-part process: isolating and defining what one has to say (i.e., clarifying for one's self what one wants to say), on which we focus in the tenth grade; translating the message into language, on which we focus in the eleventh grade; and adapting the message to the needs of the reader, on which we focus in the twelfth grade. We recognize, of course, that these are generally not discrete steps in composing; and we do not teach them as discrete steps. They provide points of emphasis for the three grades -- from the most naïve to the most sophisticated.

As in dealing with literature, our approach to composition is inductive. Our teachers do not lecture on how to write. They assign topics, stemming largely from the literature or from the language lessons, and then reproduce and discuss with the class individual papers representative of typical writing problems that members of the class are encountering. Thus, instead of lecturing about the importance of using significant detail to support a generalization, a teacher will ditto a skimpy paragraph from a student's paper and lead the class in a discussion of what details the student could have used to support, explore, or extend the idea in the topic sentence.

Initially, we restricted our tenth-graders to one-paragraph themes, thinking that would keep them from getting involved in topics that were too complicated. Some of us have come to feel, however, that such an approach is too artificial and that, although we should not at first encourage multi-paragraph papers, we must recognize that in approaches to certain topics two or three paragraphs may not only be appropriate, but even necessary.

Our language program is also sequential, cumulative, and inductive. In the tenth grade, we pay primary attention to the structure of the English language. Although we use traditional grammatical terminology (noun, verb, phrase, clause, etc.), we employ the concepts of structural linguistics. Our first language lesson, for example, involves the standard structural linguistic game of asking the students to identify the form classes of nonsense words in a paragraph we have concocted for the purpose; but it calls for listing the words not as class I or class II words, etc., but as nouns, verbs, adjectives, and adverbs.

The attempt here, of course, is to make the students aware of how much they already know about the structure of the English language and to help them to recognize that grammar is primarily structural rather than semantic. At the same time it forces them to review what they have learned in earlier years -- not in the same tired way, but from a fresh point of view.

The language emphasis in the eleventh grade is on semantics--meaning. Here we make the students aware of such matters as the nature of language, the relation between language and culture, the use of the dictionary, and the concepts of definition, denotation, and connotation. We hope to add dialect, but we have not yet been able to find recordings adequate for our purposes.

In the twelfth grade, we plan to emphasize rhetoric -- the effective use of language, and the history of the English language. We plan to write this part of the program during the summer of 1964.

The program is increasingly better integrated as it moves from tenth through twelfth grade. In the tenth grade, the material is integrated only in the sense that we are concerned throughout with basic concepts in each of the three areas: the universal concerns of man dealt with in literature, the ideas a writer wishes to express, the structure of the English language. Basing the writing on the literature and language lessons, however, does help to tie the three areas together, as it does also in the eleventh and twelfth grades. In the eleventh grade, however, the emphasis on composition (putting the message into language) and the emphasis on language (meaning) go very well together. Finally, in the twelfth grade, the emphasis on composition (modifying the message to suit the needs of the reader) ties in very well with the emphasis on language (rhetoric); and the roughly historical approach to English literature fits nicely with the study of the history of the English language.

One of the important areas of activity has been the development of a testing program. The Center is developing new tests which attempt better ways to measure learning in the area of English. Also we are concerned with evaluating the new curriculum -- both by tests being especially developed and by certain standard tests with established national norms.

Teachers College, Columbia University
Gerald Dykstra, Director

Goals of the TESL (Teaching of English as a Second Language) Project

The TESL Materials Development Project will develop and test materials designed to be useful for early elementary school children from a wide range of linguistic and cultural backgrounds.

The materials development phase of the project will include emphasis on:

1. Extensive international cooperation with a team of qualified personnel (in linguistics, reading, anthropology, psychology of learning, and teaching English as a second language).

2. Selection of language content, sequence of language content, and exercises based on comparative linguistic and cultural studies and also on studies of the common elements of materials that have been prepared for specific areas and language backgrounds.

3. Programing for multiple unit classes (while the organization of classes into units is an established technique and while experiments and use have shown its value, desirable materials uniquely appropriate to taking full advantage of such organization at the early elementary school level are not available for teaching English as a second language).

4. Activities that stimulate complete involvement, that form the context for language content, and that require meaningful communication (utterance and response units) with choice (not just memorized sentences) for the successful continuation of the activity.

5. Reading materials aimed at building reading comprehension while increasing speed with whole-phrase techniques now under development and with an abundant supply of linguistically appropriate material of real interest.

6. Oral models in the form of recordings for inexpensive, manually operated playback equipment. (Where teachers have adequate ability these need not be used or, alternatively, their function may be shifted to that of auxiliary focal point and starter for group work.)

7. Ancillary materials for composition which will build on a process by which students proceed in graduated steps from copy work toward original composition. (The same principle is involved in leading a pupil gradually from mimicry to free use of the oral forms of his language.)

8. Illustrative samples of contrastively different materials for specific linguistic or cultural backgrounds where the need is clearly indicated by research and experimentation.

Special features of the test or feedback phase of the project will include:

1. Testing of essentially the same materials in Africa, Asia and the Pacific, North and South Americas. The first stage of testing will begin in Nigeria Ethiopia, Peru, Colombia, U.S.A. (New York, New Mexico, and Mississippi) and New Guinea to determine suitability of both materials and test centers.

2. Incorporating the contributions of teachers, pupils, and observers from the test centers.

3. Observing, reporting, and interpreting similarities and differences of pupil involvement, of teacher acceptance and use of the materials, and of pupil progress.

The project should contribute some fresh approaches to materials development and it should also contribute to a statement of the nature and extent of the difference required in materials for different areas.

Work that Has Already Been Done

The project began operating in the second half of 1963. Final official approval for the project was received in August 1963. The main work during 1963 was directed at defining and organizing initial procedures. To this end the following was accomplished:

1. Definition and Establishment of Lines of Development: At the inaugural meeting of the steering committee definite lines of development were laid down, which have since guided the operation of the project. The nature of the project is such that it covers and integrates work which is currently proceeding in a number of related fields. The main results of the steering committee meeting were to clearly define:

    a. the nature of TESL Project materials in relation to other materials currently available for the teaching of English.
    b. the role of specialists (linguists, anthropologists, etc.) in advice on the type and content of materials to be produced.
    c. the relationship between the project and other educational agencies concerned with the distribution and use of teaching materials on an international basis.

2. Staffing and Production of Materials: During the period ending December 1963, apart from staff concerned with executive and administrative functions, graduate students working in the field of teaching English as a Second Language were recruited. These staff members were trained in the writing of lesson presentation and activity construction according to a preliminary pattern worked out by the project director. The writers worked on producing materials according to a pattern of progression of language teaching units drawn up at the beginning of the period.

3. Testing Centers: The project director and the coordinator established direct contact with schools in the Navaho Reservation, in Peru, and in Colombia. These schools will be among the tryout centers for the first year of materials during the school year 1964-65.

During the period 1 January 1964 to 31 March 1964 the following were the main developments in the project:

1. Staffing and Production of Materials: The staff of writers was increased to seven, all employed on a part-time basis. All writers are graduate students at Columbia University and all have had previous experience in teaching English as a foreign language in various parts of the world.

The first thirty lesson units composed of lesson presentation and related activities were finalized. As the project progresses additional problems associated with the production of appropriate materials are revealed and it is possible that the present "finalized" materials will have to be modified still further before they reach the testing stage in September.

Equipment, including objects, pictures, charts, which will, together with the instructional materials, be part of the "general teaching kit" have been assembled. A part-time artist has been working with the staff to produce this equipment. Preliminary writing on a further twenty lesson units has been completed. These are currently being written to cover grammatical points, greetings, etc., which will not be covered in the basic materials.

2. Testing Centers: Contacts were established with Nigeria, Papua, and New Guinea, the New York City Board of Education, and the Bureau of Indian Affairs in Washington, D. C., to enable further test centers to be established during the school year 1964-65.

3. Adjunct Equipment: Investigations are currently proceeding with regard to adjunct equipment which would be a desirable addition to the basic core materials produced by the project. Phonographs and records to be used for producing a satisfactory model of spoken English during the presentation of new language units are being examined. Negotiations are being made to produce a film to demonstrate the use of the materials in the classroom. It is envisaged that such a film used on an eight mm. cartridge leading projector would overcome the need for initial training courses for teachers planning to use the materials.

Plans for the Future

For the period 31 March 1964 to 31 August 1964, all efforts will be directed to the completion and distribution to the testing centers of materials for the first year of the program. This will include the following:

1. Writing in final form of the first 100 lesson units and associated playlets.

2. Duplicating of the lesson units in sufficient numbers for all teachers involved in the tryouts.

3. Collecting and producing equipment to be used with the lesson units.

4. Finalizing instructions and procedures with teachers at the testing centers.

5. Arranging delivery of materials to the test center.

Emphasis will be placed on writing the lesson units. Preliminary tryouts will be made at schools in New York to check on particular points of presentation or pupil response.

During the period 1 September 1964 to 31 December 1964 work will commence on the writing of the second year program of materials although some preliminary work on Reading and Writing Activities will be made.

During this period it is hoped that regular reports from the testing centers together with visits from project staff members to the centers will enable a review of the first year's materials to be made. On receiving reports from all testing centers progressive adaptations to the materials in the first year program will be made.

In 1965 work will continue on the Spoken, Reading, and Writing programs for the second year of the materials. Plans for 1965 are geared to the production and distribution of the second-year materials to the test centers by September 1965 to enable the test centers to begin tryouts of the materials in the 1965-66 school year.

Florida State University
Dwight L. Burton, Director

General Nature of the Project

Development of an effective English curriculum for the junior high school is the general purpose of the Curriculum Center in English at Florida State University. Three curricula, representing different approaches to sequence in grades 7, 8, and 9, will be developed and tested in six Florida junior high schools, the seventh-grade curricula during the 1964-65 school year, the eighth- and ninth-grade curricula during the two succeeding years. The same groups of students who begin in each curriculum in the seventh grade will continue through the eighth and ninth grades. A testing program will be carried out when the students reach the end of the ninth grade. Data from objective tests and from ratings on written composition will be analyzed for possible differences among the three groups as well as between the groups and a control group made up of students who were in the several schools for three years but did not participate in one of the experimental programs. Development of appropriate tests is a part of the project. Possibly more illuminating, however, than results of testing will be information gathered from observation of classes, interviews with participating students and teachers, and examination of teachers' anecdotal records and student work.

The junior high school seems an especially crucial point in the English curriculum, though most recent effort has gone into the improvement of senior high school programs. The separate junior high school, even though an established unit in most areas of the nation, remains something of an educational no-man's land. It is in the seventh grade that most pupils enroll for the first time in a subject entitled "English," though they have received instruction in English in the elementary grades. It is at this time, too, that the pupil meets for the first time, usually, a teacher presumably trained in English. The Center staff recognizes the need for a sequential program for kindergarten through grade 12, but it feels that especial attention to the junior high school is appropriate at this time.

Basic Assumptions

Certain assumptions about the nature of an effective junior high school English program, no matter how organized, underlie all three of the experimental curricula. First among these is that, in general, sequence should be spiral, a concept now being reemphasized by cognitive psychologists. Though no single analysis of the "structure" of English has yet been accepted, the Center staff is convinced that whether structure is defined in terms of skills, concepts, processes, or something else, these things should continually be reinforced in an ascending spiral. Each of the three curricula, therefore, attempts to follow a consistent rationale for sequence.

A second assumption is that, even in the junior high school, literature must be studied as a form of art and that there should be careful analysis of appropriate selections. Students should be introduced, through selections appropriate to their ability and maturity, to a variety of approaches in literatures -- ethical, generic, formal, archetypal, etc. Provision for broad reading should also be made, however.

A third assumption is that study of the English language involves more than the learning of certain skills. Narrow teaching of grammar as a supposed aid to speaking and writing has resulted in waste of time in many classrooms. It is the view of the Center staff that aspects of English linguistics are legitimate content for study in themselves. Grammar, usage, elementary semantics, and dialects and varieties of English are included in each of the three curricula, though there are differences in approach and emphasis within some of these divisions, and certain additional content in linguistics -- phonology, for example -- may be included in one program and not in the others.

A fourth basic assumption is that rhetoric is the basis for work in communication. There is concern, therefore, in all of the curricula with the ethics of communication of ideas, with logical thinking, and with the elements of speaker, tone, attitude, and audience, although only in one curriculum are formal units in rhetoric introduced. Again, approaches and emphases differ considerably from one curriculum to another.

A final assumption is that there is a need to adapt the English program to the linguistically untalented students or those with culturally poverty-stricken backgrounds. One of the participating schools has a predominantly Negro population from a slum or semi-slum area. In meeting the problem of English for these students, the Center staff relies not on drill or routine "practical" skills as much as on values and ideas in which the linguistically untalented student may be as interested as his more gifted classmate. The objective is to raise his threshold of experience through the possibility of new thoughts and new feelings.

The Three Curricula

1. The first curriculum is a "tri-component" curriculum such as that implicit in the statements of the Commission on English of the College Entrance Examination Board. Based on the logic of the subject, this curriculum is organized in blocs of content, with specific units in linguistics, written composition, and literature planned for each year. The seventh-grade units, for example, are: Basic Semantics, Basic Morphology, Lexicography, Myth, Legend, and Folklore, Introduction to Modern Imaginative Forms of Literature, Micro-rhetoric. Formal units in rhetoric are planned in only this curriculum, one in the seventh grade and two in the eighth and ninth grades. Some writing is involved in a number of the units in literature and linguistics. No specific attention is given to speaking skills.

2. The second curriculum is literature-centered and is organized in the thematic units representing concern with four basic humanistic relationships: man and deity, man and other men, man and nature, man and himself. Six "thematic categories" have been established: Man in Action, The Unknown, Decisions, Teamwork, Frontiers and Horizons, and Human Conflicts. Each year one specific unit relating to each of these general categories will be taught. Under Man in Action, for example, will be Man and Nature (seventh grade), Man among Enemies (eighth grade), and Man Alone (ninth grade). Both group analysis of selections and individual reading are featured in each unit, and the work in rhetoric and aspects of linguistics are related, for the most part, to the literature.

3. The third curriculum is based upon certain cognitive processes which seemed to emerge from a detailed analysis of specific skills basic to the study of language and literature. These processes are labeled tentatively: recognition of form, perception of meaning, relation of universals and particulars, generalization, and analogization. In the learning of language and literature of course, affective response plays a major part, but the staff feels that cognitive processes can be a basis for sequence, not only for groups but for individuals. This third curriculum, then, is built for each grade in "phases" based on each of these major cognitive processes. In each phase, literature, linguistics, and rhetoric are incorporated.

Progress to Date

Since the funding of the Center on 1 July 1963 the following work has been completed:

1. Three-year outlines for each of the curricula have been completed. These have been discussed with the supervisors of English in the counties where the participating schools are located and have been analyzed by a panel of consultants including: Albert R. Kitzhaber, University of Oregon -- rhetoric; Louise M. Rosenblatt, New York University -- literature; Thomas H. Wetmore, Ball State College -- linguistics.

2. The seventh-grade curricula have been developed in detail and will be in effect in the participating schools in September 1964. The seventh-grade materials were revised during the summer in light of analyses by the panel of consultants and the participating teachers.

3. A start has been made on the detailed development of the eighth-grade curricula.

4. A test of ability to read poetry has been developed. The test is composed of multiple-choice items on seven short, complete poems. As a result of tryout of the test, a reliability coefficient of .87 has been established and item analyses have been run.

Plans for the Future

While the seventh-grade curricula are being tried out during the 1964-65 school year, the eighth-grade programs will be developed. During the 1965-66 school year, the eighth-grade curricula will be tested and the ninth-grade programs developed. The ninth-grade curricula will be tested during the 1966-67 school year. The Center staff hopes to work out a plan for a follow-up test of the experimental curricula, or parts of them, in the

Florida State University School. The tests of the curricula in the participating schools will lead, of course, to revision. A follow-up test of the revised curricula seems essential before the materials are finally released.

Test construction and planning of evaluation will be major activities during the next two years. After a survey of the tests presently available, the Center staff agreed on the necessity to construct tests in reading of poetry, reading of fiction, and English linguistics. The staff hopes to develop, in addition, some instrument which will indicate student attitudes toward literature and give some measure of breadth of reading. The specialist in evaluation on the staff is working, too, on effective ways of gathering and recording information as the experimental teaching progresses.

University of Georgia

J. W. Richard Lindemann, Director

Purpose and Plan of the Project

The English Curriculum Study Center at the University of Georgia has as its purpose the development of curriculum materials for written composition in the elementary school. Since July 1963 the staff has been concerned with the development of framework for curriculum construction based on the coordination of ideas contributed by selected representatives of several disciplines: psychology, sociology, anthropology, and linguistics. The framework attempts to show (1) the relationship between language and thought and behavior, (2) how written language is used differently to explore different areas of knowledge and experience and to communicate the findings, and (3) what implications these ideas have for the development and evaluation of curriculum materials in written composition at the elementary school level.

Cooperating public and private schools have been selected, and initial contacts made with the faculties of these schools. These faculties have been examining the written composition in their respective schools to see to what extent that which is being done (1) requires skill in thinking, planning, organizing, and composing, (2) provides for the extended development of a single idea, point of view, or sentiment, (3) demands attention to the structure of language, and (4) summarizes the most important concepts from a study. An orientation conference was held for kindergarten and first grade teachers from these schools on 15 and 16 May 1964.

Research studies in progress are designed to determine what concepts in sociology and anthropology can be taught to first grade children, the effect of a linguistic approach on beginning reading, and the understanding that young children have of the concept of modification.

Design for Curricular Materials

One of the major problems of the first year has been to identify concepts from several disciplines that are related to language learning and use, such as psychology, sociology, anthropology, and linguistics. As these concepts are identified they are being used to define specific objectives for teaching written composition, to select materials suitable for use in a program of written composition, to choose classroom experiences that foster written composition, and to evaluate individual progress in composing. The ideas presented below are samples of what is emerging from seminars conducted by specialists in psychology, sociology, anthropology, linguistics and methodology. The ideas are being incorporated in a statement basic to the development of curriculum materials for written composition.

1. Psychology: The child's awareness of self is directly related to language development. Language is a continuing part of a person as he sees himself. The process of self-discovery is going on actively as long as the child is growing and discovering new potentialities and is reflected in his language.

Words become cues for concept development. Meaning is developed through extended association of object-situation-idea-symbol. The learning of concepts is facilitated and conceptual transfer is extended by the use of verbal labels. Vocabulary is a creation rather than an amassment. Vocabulary must continue growing as a person's thoughts continue to grow in order to communicate effectively. Last year's word combinations may not do for this year's experiences.

2. Sociology: Language learning is essentially a social process. Once the child gains command of the language of his culture, the process of socialization is rapidly accelerated. Language organizes the environment into categories and relates the child to them in specific ways. In the process of learning a language the child takes on attitudes toward the environment held by those around him.

Language is essential to the process of acculturation. If the person-society-culture system is to operate as a total, there must be interaction of people. In order to interact, people must have a symbol system, or a language. Certain species have societies without the kind of learned, shared symbol systems, such as termites, bees, ants, and gorillas. The organization of these societies is passed on genetically as part of being of a given species. Acquisition of social organization in humans must be learned through language.

3. Anthropology: Language does not necessarily typify a culture. Language is necessary to transmit culture. It is as old as culture itself. Primitive peoples often do not have a primitive language. The Eskimo, for example, has a complex language as indicated by twenty-seven tenses of verbs. There is no relationship between a particular type of language and a particular type of culture. In some languages word modifications are used for different ideas. In other languages separate words for every idea are used. No one has ever shown that a basic type culture goes with a basic type language.

Individual language and culture is the particular language and culture. Communication is based on the categories and concepts within a culture. The concept of counting varies from culture to culture; also time. One culture in South America has only two meanings of time, now and not now. That particular culture is present-time oriented. The Hopi Indians thought of six cardinal points on a compass, east, west, north, south, up, and down. Intercultural similarities and differences point up the need for categorization and conceptualization for a better understanding of one's own culture.

4. Linguistics: The process of composing has a structure -- something to say, a purpose for saying it, and an appropriate form for expression. The elements of structure do not necessarily follow a particular order, but are at some point involved in the composition. There is value in a plan for composing such as stating the main ideas on paper, deciding on the beginning, end, and middle of the composition. A later appraisal will often improve ambiguous and vague sentences, enrich descriptive passages by well chosen adjectives and adverbs, and build vocabularies in a natural way. Different kinds of writing encouraged at an early age are beneficial: for example, assignments for persuasive, argumentative- and thought-provoking writing rather than merely fanciful or imaginative writing.

Each language system is unique. It is idle to attempt to understand one language by transferring to it the conventions, terminology, and classifications of another, as has been done in the past by trying to make the structure of English fit the nomenclature of the grammar of Latin.

5. Methodology: Abilities that lead to competence in written composition fall into expressive and perceptive categories. We may assist children in verbalizing by answering such questions as the following: Does the stimulus of reading a story create in the child the desire for talking and writing?

Does watching a puppet play create an increased flow of ideas? Does oral discussion improve the clarity of writing? What is the difference in motivation for different children? What kind of stimulation results in a flow of words, an emergence and expression of ideas?

Evaluative measures of word usage and structure, and understanding of relationships, and the variety, color, and creative aspects of language show the child's ability to verbalize his perceptions of the world about him.

Timetable for Future Work

1. Conduct a summer conference for kindergarten and first grade teachers of cooperating schools from 17 July to 31 July 1964, for the purpose of writing curriculum materials.

2. Introduce the prepared materials in kindergartens and first grades of the selected schools.

3. Observe procedures in the classroom, the reactions of the children, the quality of work produced, and make records according to the planned schedules. Anecdotal records of pupils' and teachers' performances, samples of students' work, results of standardized tests or other tests will also be part of the data used to determine the usefulness of the materials.

4. Revise curricular materials and evaluative devices from suggestions made by the teachers and observers.

5. Write materials for the second, third, fourth, fifth, and sixth grades.

6. Submit materials to interdisciplinary staff for evaluation, criticism, and revision.

Hunter College
Marjorie B. Smiley, Director

Purpose

It is the aim of Gateway English, the Hunter College Project English Curriculum Development Center, to develop materials and methods for junior high school students whose achievement in English is diminished because of environmental and educational disadvantages. These children, who today live more often -- but not only -- in urban slums, come to school with few or none of the advantages in early experiences which middle class schools take for granted among middle class children. They are, in this sense, environmentally disadvantaged: they have probably conversed less with their parents, they have not read or been read to, they are unlikely to have been taught or praised for learning many of the verbal and motor skills middle class parents have time to foster. They are educationally disadvantaged by curriculum and textbooks which show and tell about a white, predominately Anglo-Saxon world in which minority characters, contributions, and problems are conspicuously absent or stereotyped and by classroom experiences that inhibit the oral and written expression of children whose language is rejected as substandard.

Gateway English aims to select and develop instructional materials that will meet the special needs of these children and methods that will help teachers deal constructively with the cultural handicaps and strengths of such students.

Strategies

A first, exploratory year spent in reviewing research, studying existing curricula and programs for underprivileged children and adolescents, and observing and interviewing teachers and children in urban depressed area schools led to the following principles or "strategies" which have guided the development of curriculum materials.

1. Materials and methods for these students must forge links between their experiences and the English language arts. Common experiences through field trips and films should be provided and these and individual experiences talked about, transcribed, and used as part of the student's reading. Extensive use of audio-visual aids will be used to help concretize language learning.

2. Progress toward mastery of standard spoken and written English should begin with acceptance of the children's subcultural dialects. Instructional materials and methods should provide opportunities to study dialect and

usage differences. "Correctness" should be approached through oral sentence pattern practice and through student editing of written compositions as students become aware of the possibilities and desirability of modifying their language habits.

3. Interest and effort in reading may be expected to follow the introduction of literature which utilizes wherever possible settings, characters, and situations with which students can identify. For these students big city life and minority characters and experiences will be high-lighted, though not to the exclusion of literature of other times, places, and people.

4. The literature for these students should have relatively mature interest levels and simple reading levels. Experimentally, selections will be made on the assumption that students scoring up to two grades below grade level on standard reading tests may be able to read above this level provided the interest level of the material is high. Where necessary, high interest materials will be adapted by project staff.

5. Clearly defined and psychologically attractive themes as organizing centers for instructional materials are of particular importance for these children. Because of their limited skills and their alienation from traditional curriculum materials, teachers have often resorted to day-by-day lesson planning which fails to provide a sense of structure and progress. Gateway English thematically organized units are intended to give students a feeling of movement within units and from unit to unit throughout a year's sequence.

6. Generalizations about language and literature will be taught inductively wherever possible, since these students particularly need help in learning to learn.

Progress to Date

After the exploratory period of planning, during which a library of reference works, texts, and trade-books for young people and a file of classroom teachers and specialists in various fields of English were begun, the staff began work on a series of manuals and guides for teachers and on its units for seventh grade. The following curriculum resource materials are not completed or scheduled for completion before September 1964:

Handbooks for Teachers: A series of pamphlet length publications which present the rationale for a particular teaching approach, suggestions for classroom applications, specific examples in the form of projects, lessons, exercises, tests, and a few references for further elaboration of the rationale.

Research and Its Implications: A review and discussion of research on the social class differences and their effects on interest and learning in the English language arts. This survey was published in IMPROVING ENGLISH SKILLS OF CULTURALLY DIFFERENT YOUTHS IN LARGE CITIES, U. S. Office of Education Bulletin 1964, #5.

Identification and Usage Stories: This handbook suggests ways in which English teachers can help these alienated adolescents identify with well-known characters in stories and tales. It also shows how teachers may help these adolescents forge links between their own life experiences and reading by encouraging them to make class anthologies based on anecdotes and true stories about themselves and people they know.

Developing Original Materials in Reading: This handbook is essentially a writer's guide, with examples, for teachers who are willing to try their hand at writing for their underprivileged and underachieving students. Themes, characters, and milieu of special appeal for these adolescents are discussed, as are ways of capitalizing on students' familiarity with TV communication styles and cues, and methods of testing reading comprehension.

The Sound of Reading: This pamphlet discusses the practice of reading aloud as a bridge to improved reading comprehension, starting with a study of the relation of word order, inflection, and stress, to sentence meaning.

Curriculum Units: Six integrated language arts units comprising a full year's work for underachieving seventh grade students from depressed urban areas have been completed. Common to all the units are the following materials: an introduction for the teacher which explains the particular importance of the theme for these children and delineates the fundamental aims of the unit; an outline of the unit (of three or four weeks' duration); desired outcomes in behavioral terms; detailed lesson plans; duplicated copies in classroom sets of all of the selections studied intensively in class; sets of samples of audio-visual instructional aids (photographs, tapes, opaque projector, transparencies, illustrated "samplers" of longer works); exercises, evaluative materials; and an annotated list of supplementary readings.

The working titles of the seventh grade units, under the general head of Exporations, are: All Kinds of Families, Who Am I?, Speaking of Language, Coping, Stories in Verse, What Will I Be?

Arrangements have been completed with the New York City Board of Education for pilot use of the seventh grade sequence in sixteen experimental seventh grade classes in four special service schools representing a range of the ethnic and social class groups attending these schools. Experimental and control classes will be compared for changes in reading interests and in rate of growth in reading comprehension and in other areas of the English language arts as a part of the evaluation of Gateway English. Evaluation plans call also for the subjective responses of teachers and students to project materials. Project staff members will meet weekly with teachers of experimental classes in each school and will on occasion give demonstration lessons.

During its second year the project made twelve video tapes of teachers and classes from special service junior high schools. After study by the project staff the best of these video tapes will be edited and made into kinescopes for use in classes in methods in the teaching of English.

Weekly taped logs were made by six students doing their practice teaching in English in special service junior high schools. These logs have proved a valuable aid to project staff in acquainting them with present practices and perceived problems in teaching English to underprivileged and underachieving students.

Next Steps

This summer, Gateway English curriculum materials will be reviewed and new materials developed by participants in a six-weeks Institute for Junior High School Teachers who are teaching underprivileged and underachieving students. The Institute will introduce teachers to existing theories, research, and programs for such students, who will serve as a preliminary review panel for materials already produced by the Center, and who will function as a curriculum writing workshop to produce additional units and curriculum resources.

Next year the project expects to complete curriculum units for grades 8 and 9, again involving teachers in reviewing and writing teams. Materials will be more advanced in content and reading level, dealing with topics related to those already selected for grade 7 and adding units on such topics as authority, justice, civil rights, and protest are planned. The preparation of additional handbooks for teachers, in particular, a pamphlet comparable to DIALECTS, U. S. A., which will consider social class dialects and suggest ways of integrating the study of these dialects into junior high school English courses is being considered. An annotated bibliography to be used by teachers who wish to recommend mature interest intermediate level books of special appeal to underprivileged adolescents has been projected.

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Next Steps

This summer, Gateway English curriculum materials will be reviewed and new materials developed by participants in a six-weeks Institute for Junior High School Teachers who are teaching underprivileged and underachieving students. The Institute will introduce teachers to existing theories, research, and programs for such students, who will serve as a preliminary review panel for materials already produced by the Center, and who will function as a curriculum writing workshop to produce additional units and curriculum resources.

Next year the project expects to complete curriculum units for grades 8 and 9, again involving teachers in reviewing and writing teams. Materials will be more advanced in content and reading level, dealing with topics related to those already selected for grade 7 and adding units on such topics as authority, justice, civil rights, and protest are planned. The preparation of additional handbooks for teachers, in particular, a pamphlet comparable to DIALECTS, U. S. A. , which will consider social class dialects and suggest ways of integrating the study of these dialects into junior high school English courses is being considered. An annotated bibliography to be used by teachers who wish to recommend mature interest intermediate level books of special appeal to underprivileged adolescents has been projected.

In September 1965 revised seventh grade materials and newly developed eighth grade units will be introduced in cooperating schools. The following September will see units for all three junior high school grades in final experimental use. The last year of the project will be used to report the results of evaluation and to editing material for dissemination.

University of Illinois
J. N. Hook, Director

The Illinois Center, which is just getting under way, differs from other Project English Curriculum Study Centers in that its focus is upon preparation of teachers of secondary English rather than upon the elementary or secondary curriculum. Its cumbersome complete title is Illinois State-Wide Curriculum Study Center in the Preparation of Secondary School English Teachers.

The word "State-Wide" in that title is particularly significant. Twenty Illinois colleges and universities,* which together provide undergraduate and graduate preparation for some five or six per cent of the nation's English teachers, are cooperating in an endeavor to improve their own present programs and, through their experience in the Center, to serve as a possible guide to other institutions throughout the United States.

THE NATIONAL INTEREST AND THE TEACHING OF ENGLISH, published by the NCTE in 1961, discussed seven "important goals" which, if reached, would make possible better English instruction in the United States.

> 1) To focus instruction in English upon the study of language, literature, and composition; 2) To educate teachers of English to the developmental and sequential nature of the study and to institute a national program for encouraging articulation of English studies throughout the school

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* Aurora, Bradley, Chicago Teachers Coll., De Paul, Eastern Illinois, Greenville Coll., Illinois Coll., Illinois State Univ. (Normal), Illinois Wesleyan, Knox, Loyola, Monmouth Coll., Mundelein Coll., North Central Coll., Olivet Nazarene Coll., Roosevelt Univ., St. Francis Xavier Coll. for Women, Southern Illinois, Illinois, and Western Illinois.

years; 3) To improve present preparatory programs for teachers of English; 4) To improve the preparation of practicing teachers of English; 5) To improve the services and supplies available to teachers of English; 6) To encourage significant research about the teaching of English; 7) To recruit and prepare more teachers of English.

Whereas the other Centers are concentrating mainly upon the first two of these goals, the Illinois Center focuses chiefly on the third, but will necessarily be interested peripherally in the first, second, fourth, sixth, and seventh.

The Center will search for answers to such questions as these:

1. What competencies are necessary and what additional ones are desirable in a teacher of English? What preparation constitutes the ideal core?

2. What constitutes the strongest possible preparation for an English minor who may be required to teach English?

3. What constitutes the best program for a fifth year for (a) a person with an undergraduate major in English who has not taken courses requisite for a teaching certificate, (b) a person with an undergraduate major in English who already is certified to teach, (c) a certified teacher who has only a minor in English, (d) a certified teacher with an English major but too poor an academic record for admission to graduate courses in English?

4. In what ways might a coordinated five-year program, or a two-plus-three arrangement, be preferable to a four-plus-one program?

5. What constitutes the best preparation for a doctorate in the teaching of English, intended to prepare persons for (a) working on the college level with students planning to teach secondary English or (b) serving as heads of secondary English departments or as supervisors of secondary English?

6. For prospective English teachers, what preparation in literature is especially desirable? in composition and rhetoric? in language? in speech? in education?

In attempting to answer these and many subordinate questions, the designated representatives* of the participating institutions have been reading extensively in NCTE publications on the education of teachers (some of which were prepared cooperatively with MLA and other organizations), in James B. Conant's books, in such critical books and articles as those by James D. Koerner, and in various periodicals. Two meetings to be held in the fall of 1964 will bring the representatives together to exchange ideas and to begin the formulation of a tentative "ideal" program of preparation. One of these meetings, lasting two days, will involve the Advisory Committee, which will consist of leading scholars in literature, language, reading, speech, English education, and teacher education in general. The second, a three-day session, will involve secondary school principals and English department heads, who will discuss strengths and weaknesses they observe in presently employed teachers; state and city administrators, who will discuss problems of certification that may arise in experimental programs; and a representative of a graduate college, who will offer suggestions concerning graduate-level portions of the programs.

Each of the twenty institutions will be specifically involved in two ways. In the first place, it will study critically its own program, attempt to evaluate the degree of success of its recent graduates in their secondary classrooms (with the assistance of an ad hoc committee within the institution and the guidance of Center personnel), work during the five years of the Center on needed revisions of its program, and begin to evaluate the results of these revisions. Secondly, each institution will be assigned a particular research problem; its findings concerning this problem will be shared with the other institutions and will be assimilated in the final report of the Center. These problems will be varied. They will concern such topics as the desirability of survey courses in literature, the relative importance of explication and historical criticism for effective secondary teaching, optimal preparation in language, the virtues of a language-composition minor with a literature major, special needs of junior high school English teachers, the amount and sequence of work in education, and procedures for recruiting and screening prospective teachers of secondary English.

Coordination of the work of the Center will be the responsibility of an Executive Committee. Its members will be J. N. Hook, director of the Center and professor of English, University of Illinois; William H. Evans, associate director of the Center and associate professor of English education, University of Illinois; and three representatives of other participating institutions, whose terms will be staggered and one of whom will serve as chairman of the committee. This committee will meet regularly, and may also conduct business by mail ballot. The director, the associate director, and a research associate will spend much time on the campuses of the participating institutions, observing and, upon request, offering counsel.

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* Each institution is entitled to two representatives, one from the dept. of English, one from education. If only one is designated, he is presumed to speak for both English and education. The majority of the representatives are heads of departments. On questions requiring a vote, each institution may cast two ballots.

As the work of the Center progresses, reports will be made generally available. Some of the parts of the study may require comparatively small amounts of time; reports on these segments will be issued whenever appropriate as journal articles and as talks at conventions. During the final months of the Center, in 1969, the participants will prepare a detailed statement including findings and recommendations.

Indiana University
Edward Jenkinson, Director

The Indiana University English Curriculum Study Center seeks to develop three distinct courses of study in English, effective for academically talented, average, and slow-learning students in grades 7 through 12. For three years, teachers in more than fifty pilot schools in Indiana will test trial guides and make suggestions for revised programs that will be written during summer conferences by teacher committees and the Center staff. After the trial programs have been revised three times, the Center staff will prepare the final courses of study for the Indiana State Department of Public Instruction, which will print the course guides and distribute them to all junior and senior high school teachers of English in the state.

In addition to the three courses of study in English, state-appointed committees and some members of the Center staff are preparing courses of study for the elective classes in speech and journalism. The Newspaper Fund of THE WALL STREET JOURNAL is financing the preparation of the journalism course of study.

To date, the Center staff, specialist-consultants, and officials in the Indiana State Department of Public Instruction have completed these tasks:

1. Before the establishment of the Center, the staff and officials in the Indiana State Department of Public Instruction appointed sixty-one able school teachers and college professors to committees on English, speech,

and journalism. Committee members represent large and small, rural and urban, public and private schools throughout the state, as well as public and private colleges and universities.

2. To make certain that the courses of study will be flexible enough for use in both large and small schools in communities with varied socio-economic levels, the Center staff has identified more than fifty pilot schools in which the trial programs will be tested for three years.

3. With the aid of a grant from the Cummins Engine Foundation, the Committee on Speech has outlined a trial program for the elective classes in speech. The committee's first task was to prepare a rigorous one-semester course in rhetoric, composed of units on exposition, persuasion, discussion and debate, and parliamentary procedure. During its summer meeting in 1964, the committee will complete its trial course of study and will outline other elective courses in speech and drama that may be offered in Indiana's public schools.

4. The three committees on English agreed on working criteria for grouping students by ability. With the aid of a grant from the Cummins Engine Foundation, the committees met before the establishment of the Center to discuss their tasks, to agree on courses of action, and to begin outlining sequential programs.

5. The Committee on English for Slow-Learning Students met for a total of eleven days and agreed on skeletal sequences in language study, literature, and composition. The sequence in syntax is eclectic, combining concepts of traditional grammarians, structural linguists, and transformational grammarians in an inductive approach. The committee is preparing tapes that will give slow learners some understanding of the history of the English language, of dialects, and of semantics. In addition, the tapes will contain drills on pronunciation and sentence structure.

   The committee is compiling a list of novels, poems, plays, biographies, and short stories of literary value that slow learners can read by themselves. The committee believes that teachers should read and explain relatively more difficult pieces to slow learners so that they can be led to an understanding of literary form and of the history of ideas. By reading more difficult works with them, teachers can give slow learners prestige which they may not otherwise enjoy, since they cannot otherwise discuss what other students are reading. The committee will also prepare sample explications of novels, poems, plays and short stories for each grade level. (The Committees on English for Academically Talented and Average Students will also prepare sample explications for each grade level in each of their two courses of study.)

Working on a sequential program in composition, the Committee on English for Slow-Learning Students has attempted to integrate composition assignments with language study and literature. The writing of single paragraphs will be emphasized in grades 7 through 9, and the writing of 200- to 300-word themes will be attempted in grades 10 through 12. Slow learners will also be given experience in filling out a variety of forms that they will encounter after they leave school.

6. The Committee on English for Academically Talented Students has begun the preparation of sequential programs in literature, language study, and composition.

   The Sub-committee on Literature has agreed on a types approach in grades 7 through 9, making provision for a loose thematic arrangement within types. The committee has also prepared outlines of units that will lay the background of myth, folklore, Bible story, and national legend in grades 7 through 9 so that talented students will be prepared for some of the allusions and symbols that they will find in the classics and in contemporary fiction.

   The sub-committee agreed to introduce students to a formal study of poetry in the seventh grade with an explanation of the basic features of a poem and a unit on the ballad. In the eighth grade, the students will study narrative poetry and a few short lyrics. In the ninth grade, they will move to the epic, sonnet, ode, and elegy. Moving from the types approach to a modified chronological approach, students in the tenth grade will study American literature, with the emphasis on major writers and not on a survey of all periods in American literature. In the eleventh grade, the students will study some of the major English writers; in the twelfth grade they will move to a study of world literature, reading a few selected works that are representative of various cultures.

   The Sub-committee on Language Study has agreed on a sequence in syntax that is eclectic. The sub-committee has outlined its programs in semantics, lexicography, dialectology, history of the language, usage and punctuation. The committee agreed that the formal study of syntax will be completed no later than grade 9. The committee is attempting to order the study of language so that mastery of one concept will lead to an understanding of the next.

   Composition assignments will be integrated with the study of language and literature. The composition program will progress from the writing of short paragraphs in grades 7 and 8 to the organization and development of 500-word themes which will require students to solve problems of writing on different subjects, for different purposes, and for different audiences. Although composition assignments will, for the most part, stem from the study of literature and language, provisions will also be made for theme assignments that will give the individual an opportunity to express his interests and to discover how much is involved in describing adequately his own activities. The committee will collect sample compositions in which both effective and ineffective writing are analyzed for the teacher, and it will prepare standards for evaluating compositions.

7. The Committee on Journalism has prepared two units on journalism for English classes. The committee believes that students should be as familiar with the structure of a news story as they are with the structure of a poem or a short story. The committee also believes that all students should be well aware of their sources of information and should understand the roles and responsibilities of the mass media in a democratic society. Therefore, the committee has prepared a unit on exploring the mass media and a unit on newswriting as a composition form to be taught in English classes. The committee is also completing a course of study for the journalism electives. The Newspaper Fund of THE WALL STREET JOURNAL plans to distribute the units and the course of study to its Newspaper Fund Fellows throughout the nation.

While the trial programs in English for academically talented and slow-learning students are being tested next year, the Committees on English for Academically Talented and Average Students will begin the preparation of a trial program for average students. This trial guide will be ready for testing in 1965.

Other plans call for: (1) A four-day conference in August of 1964 for teachers from pilot schools; (2) The selection of variously representative pilot schools in which progress of pupils in control and experimental classes will be measured; (3) Publication of the speech course of study in the fall of 1965; (4) Publication of the three courses of study in English during the summer of 1967; (5) A series of workshops during the 1967-68 academic year for all teachers of English in Indiana; (6) A series of in-service training programs during the 1967-68 academic year for teachers who want special help with the courses of study.

University of Minnesota
Stanley B. Kegler, Director

The Minnesota Project English Curriculum Development Center is concerned with the preparation and evaluation of curricular materials for English language study in grades 7 through 12. The Center hopes to offer one answer to the question of whether language study broadly conceived, can legitimately serve as the focal point of an English curriculum for secondary schools.

We concur with the widely-made observation that English curricula are too often characterized by fragmentation and disorder especially in reference to instruction about language. In present curricula, little attention is given to the nature, structure, and functions of language itself. Instruction in the problems of meaning, the forms of discourse, reference and proof, the relationships of language and culture, and the history of the language are incomplete, unsystematic, and frequently non-existent. Seldom are high school students encouraged to think of the role played by language in the conservation and extension of human values and concerns, a role most clearly seen in our literature but discernible in practical discourse as well. In short, English curricula have not done enough to lead students to an understanding of what the Danish linguist Hjelmslev suggests when he describes language as "the distinctive mark of personality, for good or ill, the distinctive mark of house and of nation, mankind's patent of nobility."

More specifically, the personnel of the Minnesota Center are developing a series of language-centered units and study guides. It should be emphasized that by language-centered we mean more than materials to teach descriptive grammar or doctrines of usage, although such concerns do play an important role in the materials. Rather, language-centered should be taken to mean a curriculum which draws upon the substantial body of scholarship built from fields as varied as orthography and psychology of language or phonology and rhetoric. These are representative of the diverse fields which are united by a common interest in the fundamentally human phenomenon of language. It is in this broad conception of language-centered that the curriculum suggested by Minnesota Center differs from grammar-centered or usage-centered curricula implicit in the proposals of some recent professional literature.

A major part of the work of the Minnesota Center, then, calls for identifying and analyzing informational and conceptual content from a wide variety of disciplines. This information and these concepts have been and are being built into teaching materials and study guides. Classroom teachers who aided Center personnel in the writing of some materials and guides, used these units in a pilot program in 1963-64. Evaluation of the units will begin in the fall of 1964 and continue through the 1965-66 school year. This stage, of course, will be followed by an analysis of the results of the experimental evaluation.

The calendar of the Minnesota Center can be divided into five stages: (1) planning and development, (2) pilot study, (3) research, (4) analysis, (5) dissemination of results and publication of materials. The first two stages will be completed in June 1964. The planning and development period ran from the date of initiation of the project, July 1962, to June 1963. During this stage, emphasis was placed on staffing the Center and the lengthy task of identifying the information and concepts appropriate for inclusion in the materials. Conceptualized statements were formulated by members of the Center staff in consultation with scholars in related disciplines. Information exemplifying the general conceptual statements was noted. The conceptualized statements were allocated to apparently appropriate units. Most of these statements, with differing exemplifications, appear in more than one unit at more than one grade level, on the assumption that this would build in a degree of continuity and enhance the opportunities for a kind of spiral sequence of concept formation. The outlines of content were revised several times and then outlines of units were started.

Content outlines for forty-one units and a complete sample unit were ready by the time the pilot study stage began in June 1963. Thirteen classroom teachers, selected from approximately 220 applicants, received stipends and attended a five-week summer program beginning in mid-June. Eight additional teachers attended and were paid by their school systems. All participants completed three courses, one in descriptive grammar, one in language and human behavior, and one in English curriculum. In addition to their coursework, participants suggested grade placement of materials and wrote drafts of units. Following the workshop, drafts of the unit materials were edited and mimeographed. Fourteen units are presently being used by the schools represented in the summer program. At the end of this school year, participating teachers will return the materials with their suggestions for revision. The units used during the 1963-64 school year include:

1. Grade 7: Introduction to the Study of Language
2. Grade 7: The Grammar of Basic Sentences
3. Grade 8: The Grammar of Modified Sentences
4. Grade 8: The Grammar of Simple Transforms
5. Grade 9: The Dictionary: Describer or Prescriber?
6. Grade 9: Two Approaches to Grammar
7. Grade 10: The Nature of Meaning in Language
8. Grade 10: The Modes and Functions of Discourse
9. Grade 10: Argument

10. Grade 10: The Language of Exposition
11. Grade 10: How We Learn to Use Our Language
12. Grade 11: Persuasion
13. Grade 12: Changes in English Lexicon
14. Grade 12: Changes in English Forms

Also during this pilot study stage, plans were made for the research stage. Additional materials were outlined, revision of existing material was started, and participants for the 1964 summer workshop were selected. Twenty-three stipends were awarded for 1964. Participants followed virtually the same schedule as the 1963 workshop with appropriate arrangements being made for those few participants who had already completed the courses specified. Emphasis was placed on preparing teachers to use the new materials and explaining the design of the evaluation. Units in addition to the fourteen listed above are included in the body of materials to be evaluated. The following unit titles are representative of these additional materials:

1. Grade 7: The People Who Study Language
2. Grade 7: Changes in the Meanings of Words (especially generalization and specialization)
3. Grade 8: Our System of Spelling
4. Grade 8: Language Varies With Approach
5. Grade 9: Language Varies With Our Interest
6. Grade 9: Transforms Producing Complex Sentences
7. Grade 10: Major Dialect Groups
8. Grade 10: Grammatical Formations
9. Grade 11: Language Varies by Place
10. Grade 11: An Outline of English Grammar
11. Grade 12: The Language of Evocation
12. Grade 12: Evaluating Persuasive Discourse.

The controlled evaluation of the materials will begin during the 1964-65 school year. Participating schools are being selected so that a cross-section of size of school and student backgrounds will be assured and so that necessary psychometric and achievement information will be available during the analysis of results. School officials have agreed to expedite the use of the experimental materials and to provide necessary information. Yet to be completed are the final form of the design, choosing the tests to be used, and final editing of new tests of linguistic sensitivity.

Following the first year of the research stage, that is during the summer of 1965, a somewhat expanded summer program is planned. The twenty-four teachers participating in the evaluation program will return for a two-week re-training session. At that time the teachers will bring their extended, detailed reactions to the materials. Also during the summer of 1965, teachers of English and Speech methods courses in Minnesota colleges and universities will be invited to attend a two-week study group. These college teachers will receive a full explanation of the program and will be asked for their judgments about the program. Following the study group for methods teachers, a study group for college teachers of English, speech, composition, or related subjects will be offered. Again, a full explanation of the program will be made and judgments solicited, especially about what the experimental program implies for beginning college courses in language.

The research program will continue through the 1965-66 school year. With good luck, the teachers who participate in the first year of evaluation will be at the same schools for the second year. In addition, more sections of students will be included in the study during the second year, hopefully at least eight additional sections. By this means, a partial replication of the first year's results will be built in.

The fourth or analytical stage of the project will start during the second year of research and continue until December of 1966. The statisticians who aided with the design of the program will also aid with the analysis of data. The fifth and final stage will concern the publication of materials and the dissemination of research results. This stage is to begin at the end of the second year of research with the final revision of unit materials and their preparation for whatever form of publication is chosen by the U. S. Office of Education. Explanatory materials and brochures to accompany the units will be written, drawing upon the suggestions of participating teachers. Included will be information for elementary school and college teachers intended to facilitate any attempts at building an articulated program, and materials for use by curriculum study groups. After completion of the analysis of the experimental results, a report will be prepared for dissemination. The publication stage for the Minnesota Project ends in June 1967.

University of Nebraska
Paul A. Olson, Director

The Nebraska Curriculum Development Center originally proposed to do work in the seven areas: (1) Composition and the usable portions of classical rhetoric: the portions which do not relate to the grammar of classical languages. (2) Composition and the possibility of a new rhetoric: the rhetorical possibilities of "discourse analysis" and recent British studies of the philosophical "grammar and logic" of language. (3) Composition and its relation to structural and transformational grammar: either of these as freeing students from unnecessary linguistic restraints and exhibiting to them their language's various grammatical resources. (4) Composition and close reading: the teaching of literature and its use as a rhetorical or structural model. (5) The construction of criteria and tests for the measurement of excellence in composition. (6) The analysis of levels of student maturity at which basic composition "habits" or "patterns of decision" are formed. (7) The construction of criteria and tests for the correction of themes in the areas of syntax, logic, and persuasive strategy.

The Nebraska Center planned to work these areas as they could become part of a fairly schematic K-12 program in language and literature. Thus far, the Center, with the help of teachers at its Woods Summer Institute and of scholars from about the nation, has completed an elaborate program in literature and language for the elementary and secondary schools. This program is more or less represented in Charts A, B and C. The charts are, however, fairly meaningless unless one knows the curriculum philosophy on which the program is based, a curriculum philosophy which goes something like this:

First: Students come first to understand linguistic, rhetorical, or literary forms by examining samples of those forms selected specifically to exhibit a pattern simply and baldly. They encounter an increasingly complex sequence of these forms, an English curriculum which is more or less planned. The cognitive theorists, Piaget and Bruner, though they do not always support one another, have been helpful in giving Nebraska planners a conception of what a meaningful curriculum structure might be.

Second: All, or practically all, Nebraska Center elementary English study begins with a study of children's literature of a high order, and for several reasons: elementary teachers have taught good literature for some time and are willing to teach a literature program based on sophisticated literary theory because they see it in a continuity with what they have been doing; children enhance their facility in composition by hearing language handled well, particularly by hearing attractive examples of the "written dialect" read aloud to them; and they learn to compose in larger and more coherent units if they are offered fictional modes or models about which they can organize their pre-operational or concrete-operational understandings of what they see, know, or believe.

Nebraska children study language in their literature units and come to understand it as it is understood by modern structural and transformational linguists by either analyzing carefully selected samples of it to construct their own linguistic descriptions or by playing "games" with it, games which provide them with clues as to how it systematically communicates "grammatical meaning" (see Chart A). The composition program, at this level, asks students to write in a series of literary modes, to experiment with manipulating linguistic forms which they have studied, and to interpret the world of their knowledge in literary or imaginative modes. It does not make heavy demands on their capacity to intellectualize in discursive prose forms.

The program, at this level, thus, includes a serious exploitation of only two of the areas in which the Nebraska Center planned to work: Area 3 (composition and its relation to structural and transformational grammar) and Area 4 (composition and close reading); but it has been reasonably successful in exploiting these areas. Little is done with "classical Rhetoric" or "a new rhetoric" (Areas 1 and 2) at this level save for the study of a few figurative and syntactic rhetorical devices. The Center hopes eventually to to build some highly experimental elementary materials out of investigations in discourse analysis (Area 2); and it has received a $65,000 grant from the Hill Family Foundation to study Area 6 of its original scheme: the formation of elementary school composition habits.

Third: The Nebraska Center's junior high units begin with a linguistic or literary core and move on to composition. The planning is, here, as is the case with the elementary program, partly based on theory and partly on expediency. Of course the plan includes a heavy dose of literary study; well over half the program is given over to the study of literary myths, heroes, genres (see Chart B). But junior high school teachers, at least in Nebraska, are accustomed to teaching language: school grammar. The see the "new grammar" as a coherent replacement for the old. The Nebraska junior high school program, thus, includes a good many units which do not begin with a literary center and then move into language and composition. Rather, some units, from the beginning, ask that students investigate language, that they examine such areas as the form classes, the dictionary, and spelling (seventh grade); syntax and semantics (eighth grade); and the history of the language, dialects, and phonology (ninth grade). The isolation of language study into separate units at the junior high level has a theoretical justification in that, if Piaget's description of cognitive levels be accurate, it is at about the time that children enter the junior high school that they come to be capable of the formal operational logical techniques necessary to serious linguistic investigation.

The Nebraska Center's junior high school composition program thoroughly exploits Areas 3 and 4 of the Center's original plan. It does a great deal with "linguistics and rhetoric" and with "composition and close reading." It plans to do more with Areas 1 and 2. For instance, its ninth grade program has a unit based on recent linguistic studies, which deals with the rhetoric of small units of language: sentences and parts of sentences. This unit will be further improved when Mr. Francis Christensen completes his commissioned work. The Center also has material which introduces students to the logical considerations which come into the handling of ordinary language material based on the work of such students of the logic of ordinary language as Mr. J. L. Austen, Mr. Ludwig Wittgenstein, and Mr. O. K. Bouwsma (Area 2).

Fourth: When Nebraska program students complete their junior high years, they finish their formal study of linguistics "in isolation." From then on, they are expected to draw upon this knowledge in their analysis of literature and in the analysis of the syntax and style of their own writing; but they no longer do work in linguistic description *per se*. Some of their work may be described as work in linguistic rhetoric; some as work in classical rhetoric.

1. They begin to divide the business of making compositions into inventing (jotting), arranging (laying out a rough copy) and writing (elocutio). Though they have been composing essays more or less in this fashion throughout junior high school, they are asked in the senior high school to reflect on the process as it may be viewed through the glass of classical rhetoric.

2. They extend their study of semantics into a study of the *ethos* and *pathos* of the writer; what he is and how he holds himself up before his audience; what he judges his audience to be and how it may be affected by language at the level of will and desire.

3. They extend their study of logic into an extended study of induction, deduction, enthymenes, and the construction of hypotheses. Here again, the tools provided by classical rhetoricians and logicians are blunt and the help of recent philosophy necessary. The argument "according to authority" may have satisfied the serious thinkers in other ages; it can hardly be expected to do so in most areas in this age; and one would not want it to do so. That Quintilian and Aristotle do not have very useful things to say about English style is fairly obvious.

4. Finally, students experiment with fitting their own arguments into the "mold" of the classical oration and into other collateral molds. At no point are the insights of classical rhetoric depended upon where they are known to be limited. The Center's program will not, when complete, ask students to depend on classical semantics or classical logic or classical linguistics; but it will ask them to consider the problems which men who have written about writing have, for a long time, considered important and to bring recent linguistic and philosophical scholarship to bear on these problems.

Senior high school students are asked to bring their knowledge of rhetoric, like their knowledge of linguistics, to bear on the study of literature. They sometimes analyze what Wayne Booth has called "the rhetoric of fiction." They try to use what they know of rhetoric, of literary modes, and linguistic forms in the writing of their compositions. The literature program on the surface makes up the bulk of the Center's material at every level; but much of the literature program supports, directly or indirectly, the composition program. For instance, the study of the fable introduces students both to the genre and to its rhetorical and symbolic possibilities; hence, the Nebraska program suggests a good deal of Aesop at the elementary level -- Aesop and the "Bremen Town Musicians" and "Chanticleer and the Fox" and the Bidpai Fables and the WIND IN THE WILLOWS, and at the secondary level, more Aesop, and ANIMAL FARM, and GULLIVER, Book IV. The program asks students to construct their own "fables" and to explore the possibility of making the fable part of their rhetorical equipment; it does similar things with tragedy and comedy, epic and romance, the picaresque tale (or novel) and the psychological novel. The literature program is so very large that to describe it would take more pages than PMLA would allow or readers tolerate. Charts A, B, and C help.

The Nebraska Center has done little with Areas 5 and 7 of its original proposal, perhaps because these are the hardest areas. It plans to initiate work in them soon. The Hill grant will provide resources for work in Area 6, but that work is just beginning. And Nebraska Center staff members are by no means satisfied with what they have in Areas 1-4. That we may know where we fail, our program is presently being tested in five pilot school systems and fifty related systems. Systematic, subjective evaluations of each unit are submitted by each cooperating teacher; and more scientific psychometric evaluations are being attempted. Soon the Center's work will be supported by a newly conceived A. B. program at Nebraska University which will train teachers for its program and a Nebraska Ph. D. program which will train supervisors for it. Moreover, a television in-service program will help teachers who are using the materials but unable to attend the Woods Summer Institutes. And these programs, when they begin to operate with a full head of steam, will strengthen the present fledgling work. The difficulty with curriculum change is that it would appear to require the changing of the whole world.

CHART A

Nebraska Center units include generally (a) a teacher packet; (b) a student packet (secondary units). Units contain reading materials, background scholarship, study questions, etc.

Elementary School

Literature: studies in myths, folk-romance materials, fables, satires, biography, etc.

Language: studies of the nature of language, form classes, morphology, syntax, dialects, history of language (under revision).

Composition: (a) writing in a literary-rhetorical mode which the children have examined; (b) experiments with manipulating linguistic structures. (The remainder of the composition program is too complex and diffuse to be described in a chart.)

CHART B

Grade 7

1. Rhetoric: "The Making of Stories": a study of the relation between speaker and audience in the creation of narratives in various cultures.
2. Literature and Composition: A series of contrastive studies of Hebrew, Greek, and Indian religious-cultural narrative.
3. Language and Composition: (a) a study of the evolution of language as described by the dictionary; (b) form classes; spelling.

Grade 8

1. Rhetoric: "The Making of Heroes": a study of the relation between speaker and audience in the creation of various types of literary heroes.
2. Literature and Composition: A series of contrastive studies of heroes in epics (BEOWULF, SONG OF ROLAND), picaresque novels (LAZARILLO, DON QUIXOTE), and historical novels (A TALE OF TWO CITIES, JOHNNY TREMAIN).
3. Language and Composition: (a) studies in semantics and the conception of meaning; (b) studies in syntax.

Grade 9

1. Rhetoric: The rhetoric of genre and of related literary perspectives and styles.

2. Literature and Composition: Contrastive studies of literary genre; satire (ANIMAL FARM); epic (THE ODYSSEY); the idea of a play and comedy (THE KNIGHT OF THE BURNING PESTLE, MERCHANT OF VENICE).

3. Language: (a) the history of language; dialects and phonology; (b) the rhetoric of the sentence and smaller units.

CHART C

Grade 10

1. Rhetoric: a full study of those aspects of the rhetorics of Aristotle and Quintilian which may be relevant to modern composition.

2. Literature and Composition: a study of various historical literary perspectives for viewing nature (THE OPEN BOAT), society (THE PRINCE, JULIUS CAESAR), moral law (THE ANCIENT MARINER, THE RETURN OF THE NATIVE), and human suffering (OEDIPUS, DR. FAUSTUS, RIDERS TO THE SEA). The rhetoric of genre continues to be emphasized.

Grade 11

1. Rhetoric: (a) the rhetoric of the FEDERALIST PAPERS; and (b) the logical uses of language.

2. Literature and Composition: a study of three themes in American literature: its view of nature (WALDEN, NATURE), moral law (THE SCARLET LETTER, BILLY BUDD), the materialistic society (BABBITT, THE GREAT GATSBY, THE WASTE LAND).

Grade 12

The twelfth grade program is being revised; presently it contains units on historical genres: (a) Shakespearean tragedy; (b) Christian epic; (c) Augustan satire; (d) Romantic lyric; (e) the class novel. The twelfth grade program in language and composition is also incomplete.

CHART D

The following persons from outside the University of Nebraska have acted as consultants to the Woods Institutes and the Nebraska Center: Kenneth Pike (Univ. of Michigan); Priscilla Tyler (Univ. of Illinois); Ella DeMers (Westport, Conn., High School); Donald Rasmussen (Miquon School); Donald King (Coll. of Mt. St. Joseph-on-the-Ohio); Edward P. J. Corbett

(Creighton Univ.); Albert Marckwardt (Princeton Univ.); Orrington Ramsay (Orange State Coll.); Andrew Schiller (Univ. of Illinois); Falk Johnson (Univ. of Illinois); Mauree Applegate (La Crosse, Wisconsin); Martin Parry (John Burroughs School, St. Louis); Barbara Gordon (Miami); Sue Brett (U. S. Office of Education); Fred Brengelmann (Fresno State Coll.); Francis Christensen (Univ. of Southern California); G. Thomas Fairclough (Univ. of Cincinnati); Daniel Bernd (San Fernando Valley).

Northwestern University
Jean H. Hagstrum, Director

The Curriculum Center at Northwestern University has from the beginning been concerned with what has recently been called the sickest subject in American academic life, English composition. In our application we promised to study composition from the seventh grade to the sophomore year in college and to try to relate it to linguistics and to the psychology of learning. Our design was too ambitious, and we have had to restrict our work to composition in the junior high school.

One of our first projects was to collect two different sets of themes from grades 6 through 10 in the Niles schools: impromptu opinion papers and "take-home" descriptive papers. These were read and evaluated by teachers qualified in academic attainment and teaching experience. Members of the Curriculum Center also examined these many papers. Everyone agreed that the writing was flat -- that it lacked vividness, descriptive detail, imagery, metaphor. The same paucity of sensuous detail and imagery that impoverishes writing in college was already the most striking deficiency in the writing of the grades.

To this awareness was added a growing conviction, based on actual experience with junior high school students and on a thorough examination of junior high school curricula, that there was not nearly enough informal writing in the seventh and eighth grades. In some cases long papers or even research papers were assigned. Usually fairly formal exposition had preempted the field, and the writing of narration and description was only perfunctory. There seemed too little concern with the personal or informal essay, with the experiences, interests, insights of the students themselves, with autobiographies, anecdotes, personal letters, and biographies.

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Requirements are often stated, it is true, for the writing of "narrative paragraphs," and these are distinguished from "expository or explanatory" paragraphs. But are narrative skills taught? Are students trained to understand and use a temporal sequence? Charles Newman, an instructor in English at Northwestern University, will undertake to state a theory of narrative art, to conduct a critique of how narrative is now being taught, to create a technical vocabulary useful for both writers and teachers, and to prepare a series of lesson plans consisting of exercises for students and commentary for the teacher.

Harrison Hayford has been searching for essays appropriate to the junior high schools -- writing that would stimulate the kind of informal, sensuously lively, and flexible writing in which we are interested. He is examining the most generally used textbooks to see how literary materials are used for composition. He is paying particular attention to their analytical assumptions and terminology. He will prepare specimen exercises to show the teacher and the student alike how to derive compositional value from reading. He is preparing a glossary of analytical and rhetorical terms to help the teacher think clearly about the problems.

Stephen Dunning is attempting to show how poetry can be used, not only to teach the art of writing or reading poetry but also to teach the art of writing lively, concrete, informal prose. The hypothesis that underlies his research is that poetry, which employs language in the state of imagistic excitement, can convey some of its animation to the student. The teaching of whole poems could of course achieve this end; but greater range and precision might be achieved could a thesaurus of successful poetic images arranged topically be made available to students. Several readers are at work culling successful short images from a wide selection of contemporary verse. These are being recorded, along with necessary bibliographical details; they will then be classified under such heads as outdoor life, people, processes, animals.

Wallace W. Douglas has worked with seventh and eighth grade teachers and with the chairman of an important high school department in the vicinity on achieving the overall compositional aim of the Center -- the improvement of sensuous animation in writing of junior high school students. But it differs in two important respects -- it may ultimately be concerned with writing before the seventh grade, and it is now deeply concerned with what precedes the actual writing of themes. The purpose of the exercises now being prepared is to direct the pupil's attention to certain aspects of the writing process and at the same time to direct the teachers' attention away from the final formal paper as a teaching mechanism. How do children learn the techniques that result in good papers? Is trial and error with the total product the only way to proceed? The student seems sometimes to be invited to write so that he can commit errors and demonstrate weaknesses which can then be attacked.

To get out of this anomalous situation, it has seemed necessary to go back to the stage in which pupils are just beginning to think about various uses of language -- back to a classroom situation that can be kept informal and unstructured. What activities does a pupil need to engage in to use the written dialect to communicate his thoughts, his feelings, his imagined motions? The exercises that are now being prepared will be generated by the _process_ of writing and not by the end product. We are thinking not of completed descriptions and narratives but of descriptive and narrative statements or phrases, of exercises in looking and reporting in elementary definition and classification. Such qualities of language as concreteness, color, force, connotative strength, and perhaps economy will also enter into lessons aimed to preserve the freshness of children's language, the language in which they choose to express their perceptions.

Accuracy is important, but at this stage not grammatical correctness _per se_. That kind of correctness may be a matter for another kind of teaching. To paraphrase a writer in the TIMES (London) EDUCATIONAL SUPPLEMENT of 27 March 1964: "In some ways composition is more like swimming than it is like mathematics: a set of unconscious skills which are cultivated by exercise rather than by theoretical study. Concrete experience comes first; this means plenty of oral work and plenty of books. A child should always meet a usage first in conversation, or at most in his own reading: never embalmed in a grammar book, however well devised." Many of the assumptions of these quoted sentences underlie the exercises that are now being prepared under Mr. Douglas's direction.

J. H. Hagstrum is preparing a series of essays on the general problems of composition. The schools have told us again and again that there is confusion in terminology and in definition. We were urged to give some thought to such large matters as these: What is English? What is composition? What precisely are the aims of our field? What do the important terms mean? So far two essays have appeared and been sent to all the advisory schools and to all the other Curriculum Centers -- with strong invitations to respond. The first essay, concerned with composition in the seventh and eighth grades, was a critique of the present multiplicity of aims, of composition defined as communication solely (a psychological process), of the too early use of formal writing, and of restrictive, inhibiting conventions. On the positive side, an attempt was made to define informal writing and to suggest ways in which the schools could strike out in establishing assignments more relevant to the needs of their students. The second paper attempted to define composition not in psychological terms as communication but in rhetorical terms as an art made up of several clearly recognizable skills. The next essay will be entitled "The Tyranny of the Paragraph." What is a paragraph? Is there -- or ought there be -- a topic sentence? Are paragraphs in fact the building blocks of writing? After this paper essays will follow on the problem of form in writing -- of coherence or flow. How does one train a student in the art of having one sentence follow another? Are the old forms of discourse helpful? Does the fact that these are combined in much writing obviate their being taught as separate skills?

When these essays have been completed and the reactions of the schools collected, they will be gathered together, revised, and submitted to the U. S. Office of Education. They will be supplemented and enriched by the separate but related projects that have been described. It is too early to tell if these separate ventures will form a cohesive whole or remain individual efforts. In either case they may throw light on some dark corners. They are certainly not going to solve all the problems of composition.

University of Oregon

Albert R. Kitzhaber, Director

The Oregon Curriculum Study Center, which began work in September 1962, is preparing a curriculum in language, literature, and rhetoric for grades 7 through 12 and for approximately eighty-five per cent of the children. We are assuming that substantially the same kind of curriculum can be taught to the great majority of children, with different expectations at different ability levels and with some changes in content; but that there will come a point on the ability spectrum where, in order to do justice to the children concerned, an essentially different kind of curriculum must be made available. We are not, in other words, dealing with the slower of the "slow learners."

Associated with the University of Oregon in staffing and operating the Center are seven school systems, six of them in Oregon and one (Seattle) in the state of Washington. The original plan specified only three cities in the immediate vicinity of the University of Oregon; a year ago we added the other four when it became apparent that we needed a larger pool of expert teachers to draw from, both as writers and as teachers of pilot classes.

The Center has been staffed this year by the director (English), the assistant director (English education), a testing and evaluation specialist (statistics and educational measurement), five members of the English department of the University (one in linguistics, two in composition, two in literature), one member of the speech department of the University, and twelve teachers from the public schools of the seven participating school districts. All of the school teachers are on halftime appointment for the year with the Center; the University people are on one-third to two-thirds time with the Center.

The Center's plan of operation includes a series of three summer institutes for pilot teachers to prepare them to teach the new curriculum; the writing of text materials to be placed in the hands of students, and of detailed teacher's guides accompanying the materials for the students; and extensive classroom trial and evaluation, followed by thorough revision and a second or even third trial in the classroom.

The first summer institute, for seventh and eighth grade pilot teachers, was held last summer. The teachers (about thirty) took three eight-week graduate courses in English: structure and history of English, applied criticism, and rhetoric of oral and written discourse.

Meanwhile, during last spring and summer, a detailed plan was drawn up for the several strands of the curriculum. The language curriculum is being justified on its own merits rather than on any supposed or actual application to other parts of the curriculum such as composition; it consists mainly of the study of transformational grammar, presented inductively. This knowledge is supplemented by the study of social levels in language, the history of writing systems, the nature of language, the history of English, elements of phonology, dialects, and similar material.

In devising a plan for the literature curriculum, we endeavored to test the assumption that a truly sequential curriculum in literature is possible. We considered, then rejected, schemes based on genre, on chronology, on national origin, and on various topics such as "Understanding Your Neighbor" or "Our Democratic Heritage," because none of these schemes is animated by essentially literary considerations. We rejected also a plan founded primarily on our -- or someone else's -- notion of a scale of increasing difficulty in the literary works being studied, though obviously the question of difficulty must be kept in mind in organizing such a curriculum.

We finally decided to build the literature curriculum around the three concepts of Subject, Form, and Point of View. These notions, ambiguous and slippery though they may seem, are nonetheless central to the understanding of any literary work, simple or complex, naive or sophisticated; and one can develop a plausible sequence using them as organizing principles. The scheme has the further advantage of centering the attention of both teacher and student constantly on the literary work as a work of art, to be not only enjoyed but understood.

The curriculum in rhetoric attempts to capitalize on the fact that the theory of oral discourse and the theory of written discourse have far more points of similarity than of difference. The structure of this strand of the curriculum is therefore provided by rhetorical theory, in which will be included some study of semantics and logic, with applications sometimes taking the form of written compositions, sometimes of assignments in speaking. Such general concerns as Purpose, Audience, and "Voice" run through all six years of the curriculum. And in each year the students will study invention, disposition, and style at an increasingly complex level. Theory is being inductively derived from the analysis of models.

We have had to recognize that such required instruction in oral discourse as can be given in the public schools at the present time is going to be primarily the responsibility of the English teacher. Therefore, we have tried to produce a curriculum in speech that will lie within the ability of English teachers to present, assuming they have had the kind of rhetoric course that we offer in our summer institutes. But at one point, the eleventh grade, we will provide a special course in speech taught by a speech teacher two days a week, while English will be taught by an English teacher the other three days. Thus at one point at least in his school career, each student will have the advantage of instruction in speech under the guidance of a professionally qualified speech teacher.

The seventh grade curriculum in language, literature, and rhetoric is now complete, and the eighth grade curriculum is nearly done. Selected units have been undergoing trial in the classrooms of the pilot teachers since last January, and an extensive program of subjective evaluation has been carried on. Each teacher has been visited several times during this period by members of the staff of the Center, who have wanted to see first hand how the units are succeeding in the classroom and offer any help or advice they can.

During the coming summer a group of college and University faculty members and seventh and eighth grade teachers will revise and edit the units for grades 7 and 8, provide alternate versions for above-average and below-average students when necessary, and organize the entire curriculum into a coherent course of study. All units will then be duplicated in sufficient quantity for a full-scale trial in the pilot classrooms of the seven participating school districts beginning next September. At the same time, a thorough objective evaluation of the new curriculum will be begun, under the direction of the testing and evaluation specialist on the Center's staff. Teachers will continue to send in their subjective reactions at regular intervals.

In the coming summer the Center will offer its second institute, this one for thirty-three ninth and tenth grade teachers. The twenty-two school and University teachers who will be writing the ninth and tenth grade curriculum next year have already been chosen and have held a preliminary meeting. They will begin work late next September. Selected units, as they are completed, will be given a preliminary trial in the classrooms of the ninth and tenth grade pilot teachers during the year.

In the summer of 1965, the third and last institute will be offered, this one for eleventh and twelfth grade teachers. The eleventh and twelfth grade curriculum will be written beginning in September 1965, while the ninth and tenth grade curriculum is undergoing its first full-scale trial. The seventh and eighth grade curriculum will receive its second trial during that year, after having undergone a revision on the basis of its earlier trial.

The work of the Center is expected to conclude in August 1967, with the curriculum of each of its six years having been tried out and revised at least once, and most of it twice. It should therefore be, at the conclusion of our work, a well-tested program, supported by a considerable body of evaluative data.

University of Wisconsin
Robert C. Pooley, Director

Jointly sponsored by the University of Wisconsin and the State Department of Public Instruction, the Wisconsin English-Language-Arts Curriculum Project was funded as of 1 May 1963. It is a Federally supported continuation of a state-wide curriculum activity initiated in 1959 by the Wisconsin Council of Teachers of English. Unlike most other Curriculum Centers, the Wisconsin Center is the outgrowth of English teachers themselves in answer to a recognized need for language arts curriculum improvement. Because of this origin the operation of the Wisconsin Center differs from that of other Centers in being a state-wide program of in-service education, involving every elementary school teacher and every high school teacher of English who consents to join the activities of the Center. Local participation consists of attendance at meetings of a voluntary committee to discuss and evaluate materials sent out from the Curriculum Center. At present writing (May 1964) there are sixty-five elementary committees and ninety high school committees at work on curriculum ideas and materials. A rough estimate would indicate that about 1400 teachers are involved as well as a considerable number of administrators and supervisors.

Obviously so wide-spread an operation must rest upon personal contacts and written follow-up. The project directors have devoted the major part of their time to school visits and meeting groups from ten to several hundred teachers at conferences initiated by the local schools. In September 1963 every high school teacher, every school administrator, and every elementary school teacher of English and related subjects received a copy of an announcement, giving details of the project and inviting participation. The response has been gratifying, and the invitations to the directors exceed the time available. In time every school in the state that desires to participate will be contacted, either by a visit of a director to the school or by attending a meeting at a central point to which a number of small schools are invited.

Although English is conceived of as an integrated subject, the study of the English Language Arts has been divided, for curriculum analysis, into three areas of emphasis. In the school year 1963-64 the attention is focused upon the teaching of literature and the encouragement of voluntary reading in grades K-12. For the school year 1964-65 the attention shifts to the communicative arts of speaking and writing. In the third year, 1965-66, the emphasis is upon the English language, including grammar. The final year of the project, 1966-67, will be devoted to the verification of teachers' experience with the temporary curriculum guide lines, final editing, and the publication of the recommended state-wide curriculum in the English Language Arts, grades K-12.

Contact with local committees is maintained by a series of bulletins, published monthly, one set for the elementary grades, and one set for grades 7-12. These bulletins take the form of editorial discussion, including reading references and classroom practices, in specific aspects of teaching English. Some subjects dealt with so far are: principles underlying the teaching of literature, free reading and book reports, teaching literature by themes, the use of audio-visual material to enrich the literature program, literature as the basis of creative dramatic activities, folk literature, and approaches to poetry. Each bulletin contains an answer sheet to be filled out by the group leader, indicating the number of persons in the group discussion, the grades represented, and the opinions and suggestions of the group in answer to specific questions. This material is collected and tabulated by staff assistants, and will be used for reference in the actual curriculum writing.

A second type of contact -- stimulus -- is provided by special conferences sponsored by the project. In the Milwaukee area, a general meeting was addressed by Dora V. Smith on "Children's Heritage in Literature." A bibliography prepared by Dr. Smith is available to all schools of the state. In the Madison area, a meeting was addressed by Helen C. White on "Teaching Shakespeare in High School." This talk was taped and the tape made available to teacher groups in high schools. It has proved so popular that a second copy was made and distributed. Similar meetings are planned for other centers of the state.

A third type of advancement of the project is in conference of special groups. Such a meeting was held in Madison, in January 1964, of the officers or delegated members of interested lay community groups. Among those attending were representatives of the Wisconsin Manufacturer's Association, American Association of University Women, University Board of Visitors, Parent-Teacher Association, State Business and Professional Women, Wisconsin Association of Better Broadcasts. Another special conference is planned for October 1964 to include all college teachers of courses in the methods of teaching English from the universities, private colleges, and state colleges of Wisconsin.

During the spring of 1964 preliminary materials for the guide lines to the teaching of literature will be prepared in the office. A panel workshop of twenty-five selected leading teachers has been invited to gather at Stevens Point State College, 19 July to 1 August, to draft the details of the literature guide lines. These will be edited in August, published in September, and distributed to schools by October, for experimental use. Work will then proceed on the same pattern for speaking and writing, with two workshops in 1965, and for language and grammar the following year with two workshops in 1966.

The product of the Wisconsin Project will in quantitative terms be less extensive than that of other Centers, where attention is focused upon materials. The unique aspect of the Wisconsin Project is the active involvement of so large a number of teachers in their own schools in the development of the curriculum. By this procedure it is hoped that the final curriculum will reach prepared and activated teachers, acquainted with the basic ideas of the new curriculum, and eager to apply them to the teaching of their classes. Only by some such procedures can a curriculum genuinely improve the teaching of the language arts in an entire state.

CURRICULUM DEVELOPMENT AT THE CENTERS FOR SOCIAL STUDIES

Edwin Fenton and John M. Good

The curriculum revolution which began in mathematics, the natural sciences and modern foreign languages about a decade ago has at last reached the social studies. More than forty curriculum development projects of national significance promise to revolutionize teaching about man and society. These projects are producing materials for all grade levels from kindergarten through the first two college years. They have been financed by various agencies. The Office of Education of the Department of Health, Education and Welfare and the National Science Foundation support about half of them; private philanthropic agencies support most of the remainder; a few draw funds from public school systems. They are organized in a variety of ways. The majority are located in universities with one or more faculty members in charge; a few are controlled by organizations of scholars such as the American Anthropological Association; others are run by school systems, groups of universities or independent non-profit corporations such as Educational Services Incorporated. Their objectives are as varied as their structures. Some projects aim to turn out materials for one course in one discipline; others are preparing units of materials which can be incorporated into existing courses; the majority propose to develop entire curricula or to isolate the principles on which curricula can be built.

The eight Curriculum Development Centers supported for more than a year by the Cooperative Research Branch of the U. S. Office of Education are in the forefront of curriculum development work in the social studies. The principles upon which these projects operate typify the work of the remaining Centers as well. Yet, despite a marked degree of concensus about fundamentals, the projects do not imply the development of a national curriculum. In the first place, the objectives and procedures of each Center have been established independently without direction from government officials. The Office of Education review committees have only accepted or rejected proposals; they have not helped to design the projects themselves. Secondly, many of the projects strive for similar objectives. The work of the Minnesota and Syracuse projects, for example, may well provide two broad avenues toward a single goal or perhaps toward quite different goals in the same general area. Third, no one project has undertaken the entire task of designing a complete elementary and secondary curriculum and producing all the new materials and teaching strategies to implement the design. Hence, each school system will be forced to choose among competing programs. Finally, there seems to be no intention of having the materials produced by the projects printed on government presses. It seems more likely that Centers will contract with professional publishers for rights to the new material, which will then be forced to seek its own level in the marketplace.

The objectives of each Center indicate the range of the projects. Both Minnesota and Syracuse are identifying and arranging in order the basic concepts around which curricula may be planned. Each hopes to produce materials to teach these concepts when no commercially published materials are available. Harvard, Illinois and Carnegie Tech are producing integrated series of courses at the junior or senior high school level. The Harvard material is designed primarily for less able students; the Carnegie Tech project is aimed at the top quarter of the ability range; Illinois is working with more typical students. The approach of these three Centers also differs somewhat as the full reports which follow indicate. Ohio State will produce a one year economics course. Northwestern is wrestling with the three courses in American history usually taught at the fifth, eighth and eleventh grade levels in an attempt to build in sequences and dispense with needless repetition. The Georgia Center is developing materials and teaching strategy for elementary schools in anthropology. Despite these differences, however, most of the projects have the following common characteristics:

Organizing Principles of the Centers

Each of the eight Centers is located in a university and headed by a university professor; in one instance a high school teacher is a co-director. Most of the twelve projects include four groups of people on their staffs: scholars from subject departments; experts in learning theory, sometimes drawn from departments of education; practicing high school teachers, many of whom try out material in the classroom; and psychometricians responsible for assessing the effectiveness of the project. This diversity of leadership makes each project a truly cooperative effort. No one -- scholars from the disciplines, professors of education, classroom teachers or psychometricians -- is dictating to the others. This cooperative spirit may do much to bridge the gap which has too long separated men who should be engaged in the same endeavor.

Shortening the Time Lag Between Research and Implementation

Because research scholars direct many projects or are intimately involved as advisers and writers, the latest findings both in subject fields and in cognitive processes have been incorporated into the work of the Centers. In the past, two or three decades have often separated the work of the scholar from the material and methods found in textbooks. Now most of the materials developed by the projects are up to date; some are at the forefront of research. If suitable arrangements can be made to hasten publication, the new social studies, like the new math and the new science, will represent the latest and best work of some of the nation's foremost scholars.

The Emphasis on Structure

With the single exception of Donald Oliver's project at Harvard, each of the OE curriculum projects in the social studies seeks to identify the structure of social science disciplines or to build a curriculum around social science concepts. The directors have taken their cues from Jerome Bruner's influential volume THE PROCESS OF EDUCATION (Cambridge, 1960). Thus far, however, no consensus about structure has emerged. Some groups seem to identify the term with generalizations drawn from the social sciences; others use the terms structure and concepts interchangeably; one implies that structure is synonymous with the social scientists' mode of inquiry. One by-product of the curriculum projects may well be a measure of agreement about the structure of the social studies or, if consensus fails to develop, some significant guide lines for future research.

Inductive Teaching

Most teaching in traditional social studies courses continues to be expository. Teachers ask students to read textbooks and to learn the facts and generalizations they find there. Like the new mathematics and the new science, the new social studies has abandoned this system of instruction. In its place has come a set of teaching strategies diversely called the discovery method, hypothetical (from hypothesis) teaching or an inductive approach. No matter what the name, the method is roughly similar. Students are presented with data and encouraged to discover generalizations for themselves, to build one generalization upon another, and eventually to develop an understanding of the entire structure of the subject which they are studying. With only one exception, the directors of the projects indicate that they will not write new textbooks. Instead they are writing or collecting a vast variety of materials -- narrative accounts, sets of statistics, case studies, analytical articles and so forth -- which students may use as take-off points for thinking. Abandoning conventional texts in which facts and generalizations are predigested for students may in itself work a revolution. The implications for pre-service and in-service training of teachers are enormous.

Emphasis Upon the Disciplines

With the exception of Harvard, all of the projects intend to teach generalizations and concepts drawn from the disciplines of history and the social sciences. In the courses which are being designed, students will organize knowledge as historians, geographers, political scientists, economists, anthropologists, sociologists and psychologists organize it. Two projects are primarily devoted to identifying generalizations from the disciplines and to arranging them in sequential order for teaching. All of them have scholars on their staffs one of whose major function is to identify the most significant parts of their disciplines. These same scholars or other members of the staff then incorporate the ideas which have been identified into materials suitable for inductive teaching at various grade levels.

The emphasis upon disciplines, however, does not mean that the projects intend to base each course exclusively upon one discipline. On the contrary, most of them intend to integrate materials and techniques from various disciplines within each course they write. Even courses which carry traditional social science labels -- Comparative Politics or The American Economy, for example -- contain materials which would be equally at home in courses labeled sociology or anthropology. Moreover, the new history courses are incorporating much more material from social science than traditional courses have done in the past.

Several of the projects emphasize another aspect of the disciplines, the mode of inquiry of history and the social sciences. Traditional courses have often failed to investigate explicitly the manner in which practicing social scientists develop and validate hypotheses. The new emphasis upon the disciplines combined with the search for structure and the employment of inductive teaching techniques have given a new emphasis to the types of critical thinking characteristic of the best scholarly work. The emphasis is shifting away from the accumulation of facts for their own sake to learning facts as part of the thinking process of scholars.

Emphasis Upon Sequential Learning

Many traditional social studies curricula pay minimal attention to sequential and cumulative learning experiences. Books are adopted and courses of study written by committees which often pay only lip service to what a student has learned previously or what he will learn in future courses. Each of the OE projects makes an effort to build each course securely upon what students already know. Each project has tried to develop a hierarchy of learnings to be taught in sequence beginning with the simple and moving toward the more sophisticated. This arrangement takes place within individual courses, within sequences of several courses, and in two cases, for entire curricula from the kindergarten through the sophomore year of college. Several directors are also concentrating their attention on devices to eliminate unnecessary repetition which has sometimes crept into cyclical curricula. Again the influence of Professor Bruner's work is apparent. Project directors have taken seriously his contention that any idea can be taught to a child at any age in some form. By introducing ideas in simplified form early in the school experience and developing them with new materials in a more sophisticated manner later on, the new sequential curricula are discovering fresh principles upon which to build scope and sequence studies.

New Types of Materials

Only one social studies Center sponsored by an OE grant proposes to write a textbook; even this one sees the text as only one of a number of teaching instruments. Nor are the majority of the projects revising syllabi to accompany already existing materials. Instead, the project staffs are writing a host of new materials of a bewildering variety. Some of them are designed to supplement work in traditional texts and can be used for a week or so in a course. Others cover an entire year's work or even work for three or four years. They consist of readings, games, films, tapes, transparencies for the overhead projector, slide tapes and other audio-visual aids. The majority of projects have embraced a multi-medial approach to learning and have produced specific audio-visual aids for specific purposes in specific lessons. All of these materials imply new teaching strategies.

New Subject Emphases

This report has already mentioned the increased emphasis upon knowledge and method from the social sciences. Virtually every social science discipline has at least one committee working on materials, some of them supported by generous grants. The eight OE projects also incorporate much social science. In the past, history, geography and civics have formed the heart of the social studies curriculum. Now anthropology, sociology, economics, political science and other disciplines clamor for a place. Even within history, scholars of the non-Western world insist that more attention should be devoted to their specialty at the expense of American and European history. Again the implications for pre-service and in-service training of teachers is plain.

Giving Maximum Aid to Teachers

Each project recognizes its responsibility to help teachers learn to manage the new materials which are being developed. In an attempt to meet this responsibility, the projects try out their new material in elementary and secondary school classrooms. In a few cases, classroom teachers actually develop a large proportion of the material. In other instances, they are responsible for planning teaching strategy. In still others, they simply try out materials and report their findings to project directors. All of these procedures help to reveal the problems for teachers which the curriculum projects will bring. As a result of testing, project staffs revise their materials and develop new ways to teach those which have not worked well in practice. Some groups have even written daily lesson plans to indicate clearly what the writers of particular material think might best be done with it.

Evaluation

Each of the eight Centers has a psychometrician on its staff to evaluate its work. Most groups try out their material on experimental classes and test their results against control groups in the same schools. At several Centers, testers are developing new evaluating instruments designed to assess the ability to reach objectives not covered by traditional examinations. When the results of this research have been evaluated, we should know more precisely than ever before what it is that we can expect our students to learn from their social studies courses.

Publication and Availability

None of the material produced by the OE Centers is yet available to the schools. Nor is most of the work of Centers which have been financed by the National Science Foundation or by private philanthropies. In fact, no arrangements have been made for publication nor has a policy been established by the government. Several committees have wrestled with the publication problem for three years, and innumerable meetings devoted to weighing the interests of the four major groups involved -- the public, the universities, the authors, and the publishers -- have taken place. Both the Office of Education and the National Science Foundation expect to establish a policy for publishing in the near future.

The Future

With the new emphasis upon education in the Congress, funds should be available for many years to finance the sort of effort now going on in the Curriculum Development Centers. Once new materials are available for use in the schools, we will face several fresh problems. First, how can teachers and school administrators choose intelligently among the flood of new approaches coming from publishers' presses? Second, how can we incorporate the work of the best of the projects into an integrated and sequential curriculum when the directors of these projects may have begun from quite different premises without exact knowledge of what one another was doing? Third, how can we reeducate our present generation of teachers to handle new materials in new ways? Finally, how can we change preservice education to prepare the next generation of teachers for the challenges of the new social studies? Summer institutes and generous grants for graduate and undergraduate education may help to solve some of these problems, but they cannot solve them all. Only the practicing classroom teacher can translate the plans and the materials of the curriculum projects into the reality of the classroom. This challenge may well occupy the entire profession for the decade which lies ahead.

REPORTS OF THE SOCIAL STUDIES CENTERS

Carnegie Institute of Technology

Edwin Fenton and John M. Good, Co-Directors

The Curriculum Development Center at Carnegie Institute of Technology is developing a new curriculum in history and the social sciences for able students in grades 9 through 12. By a new curriculum we mean an entire set of original materials for students with recommended procedures for teaching them throughout the high school years. This project has been based upon seven major principles. They are:

First, the readings for the courses are chosen partly to help students learn the mode of inquiry of history and the social sciences. In each course a number of lessons are devoted primarily to the mode of inquiry with subject knowledge on those days receiving a secondary emphasis. In addition, teachers help to develop the mode of inquiry as a secondary emphasis on those days when subject emphases are paramount. Each lesson plan has been coded to the cognitive objectives in Benjamin Bloom's TAXONOMY OF EDUCATIONAL OBJECTIVES: THE COGNITIVE DOMAIN (Ann Arbor, 1956) in an attempt to indicate aspects of analytical thinking appropriate to each lesson. The materials consistently try to assess the transfer of the mode of inquiry from one situation to another.

Second, the materials developed are designed for inductive teaching. All the courses consist of readings, each with an introduction, a few study questions and the article itself. Some of the articles are from source materials; most have been written by the staff especially for the course. The audio-visual components of the courses have also been designed with inductive teaching in mind. From all these materials students are expected to develop their own conclusions and to link one generalization to another. Abandoning the sterile textbook in favor of material from which students can discover insights for themselves marks a significant departure from most social studies teaching.

Third, the material within each course and from one course to the next has been organized sequentially. Each major subject and skill objective has been ordered to give adequate opportunity for reinforcement of learning and to permit learning to build upon what has gone before. Only when four years of a curriculum are planned and taught in sequence by the same group of people can we hope to unify an entire curriculum around the emphases which seem most important.

Fourth, our materials rely heavily on audio-visual aids designed specifically for particular tasks within particular courses. We have developed all our own audio-visual aids -- tapes, slide tapes, transparencies, filmstrips, and photo-essays. These materials engage the full perceptual apparatus of the student. They also provide a welcome change-of-pace to both teacher and student.

Fifth, we are providing supplementary material with each course. The courses are designed with four readings per week for each of fifteen or sixteen weeks. In most schools classes meet five days a week and most semesters are eighteen weeks long. By providing less material than is required for a full semester we hope to give each teacher an opportunity to develop independent projects for his students or to choose from among the supplementary work which we have developed. Each course has a different sort of supplementary material: reports from collections of readings in political science, book reviews in European history, current event projects to link class and newspaper in economics, a research paper in non-Western studies, and games which simulate social reality in several courses.

Sixth, we have built two types of evaluation into the project. The staff has written weekly tests within each course, essay one week and objective the next. Many of the questions are designed to test cognitive objectives rather than knowledge. Some have been designed specifically to assist the teacher to measure student mastery of a particular objective rather than to rank the students. The other sort of evaluation -- and the more important -- is an attempt by our staff evaluator, Dr. Alfred Hall, to assess the achievement of the eight classes of students enrolled in the experimental sections of the courses in five Pittsburgh high schools against the work of eight matched groups enrolled in control sections.

Finally, we have tried to give maximum aid to the teacher. A Teacher's Manual, almost as extensive as the reading material itself, accompanies each course. It contains a suggested lesson plan for every day, copies of the examinations, copies of the handouts used during class, and scripts of the tapes and slide tapes. The lesson plans are designed to indicate what the designers of the material think should be done with it. They help to assure that cumulative and sequential learning can take place by raising questions which call for the development of specific skills or the expansion of knowledge about a topic which may have been investigated earlier in the course or in some previous course.

Since our project began in May, 1963, we have written, taught and revised two one-semester ninth grade courses and are presently teaching them again in revised form. We have also written and are now trying out in the classroom two one-semester tenth grade courses. The eleventh grade course is under development this fall and tentative plans have been made for twelfth grade.

Two co-directors, one from Carnegie Tech and one from the Pittsburgh Public Schools, direct the project under the supervision of Carnegie Tech's Dean John R. Coleman. Several distinguished scholars at Tech serve as subject consultants; curriculum experts from the Pittsburgh Public Schools advise on matters of grade placement. Each summer Pittsburgh high school teachers who will teach the new material in the fall help to write it in a one-month writing session on the Tech campus. They are joined by writers from universities. The courses are then revised by the co-directors during the academic year. Regular meetings of the co-directors with the cooperating teachers, all of whom teach the project material to classes of able students in Pittsburgh high schools, guide the process of revision.

During the first semester of the ninth grade, students study the way in which primitive people, American citizens and citizens in the Soviet Union are governed. The course, more behavioral than institutional, is organized around four major issues: who are the leaders; how are decisions made; what is the role of the individual citizen; and what is the ideology which underlies the political system? The course in Comparative Economic Systems during the second semester of the ninth grade examines traditional societies. the United States and the Soviet Union and is organized around four major questions: how do these societies decide what to produce; how do they produce it; how do they distribute goods; and how are the economic systems related to the values and the historical development of the societies of which they are a part?

During the first semester of the tenth grade students are studying the development of political, economic and social systems in the West. This work builds upon the political science and economics taught in the ninth grade and introduces the study of social structure as a third theme. The work of the second semester consists of four area studies in the non-Western world: China, India, South Africa and Brazil. Each study first examines the traditional culture of the area and then surveys the way in which the West came in contact with that culture. Finally, each study focuses upon one facet of life in the area seen in its total cultural setting. In China we study the organization of a totalitarian government, in India the process of economic growth and development, in South Africa the social structure centering on the institution of apartheit and in Brazil the vast number of problems which come with dramatically rapid population growth in an underdeveloped land. Each of these studies develops a theme introduced during one or more of the previous three courses.

The eleventh grade course -- a college-level course in American history -- is now being developed. The exact emphases are not yet clear. We have decided, however, to carry our three emphases on policical behavior, economic life and social structure through the course which will begin with a study of the emergence of a modern society in the colonies during the eighteenth century. This course will be taught during the 1965-66 academic year. In the twelfth grade we plan to teach either a full year of behavioral science of a semester of behavioral science and a semester of the humanities.

The two ninth grade courses will be ready for publication as soon as the Office of Education decides how the material developed in its curriculum projects will be released for more widespread use. Another course will follow in order each six months. Tech plans to apply for additional funds to support a Demonstration Center where interested members of the profession could observe the project in action. Tech also will consider the desirability of holding summer institutes for teachers under the provisions of the new National Defense Education Act.

University of Georgia

Marion J. Rice, Coordinator; Wilfrid C. Bailey, Co-Director

The purpose of the Anthropology Curriculum Project at the University of Georgia is to develop instructional material in anthropology for pupil and teacher use in grades 1-7. The material will constitute a series of logical subject matter units, one for each grade level, which can be used in connection with the existing social studies program. The content will focus on the systematic concepts which are significant to the discipline of anthropology, and through which anthropology makes a unique contribution to the interpretation and understanding of social phenomena and human behavior.

It is tentatively planned to prepare the material in two cycles: a primary cycle, for grades 1-3; and an intermediate cycle, for grades 4-7, and possibly grade 8. Material for the primary cycle will emphasize teacher materials for oral and visual presentation, with the amount of pupil reading material increased proportionate to growth in reading ability. The intermediate cycle will replicate and reinforce concepts introduced in the primary cycle, but will be developed in such a manner that it may be used independent of the primary cycle. Preparation and field testing of the material will be phased according to the following plan: Year I, Grades 1 and 4;

Year II, Grades 2 and 5; Year III, Grades 3 and 6; and Year IV, Grade 7 and possibly 8. This phasing of the material will permit a substantial number of students to be exposed to four successive years of the material, either at the primary level and grade 4, or at the intermediate level.

There are fourteen experimental schools, all in Georgia, representing children and teachers from rural, town, and metropolitan areas. Each of the experimental schools has two types of cooperating teachers at each grade level: an experimental teacher, who will receive training in anthropology, and a control teacher, who will also use the materials but who will not have had training in anthropology. This tryout pattern will permit the project to examine not only increments in pupil learning from systematic instruction in anthropology, but will also permit an examination of the relationship of pupil learning in anthropology to teacher knowledge of anthropology. This tryout pattern will also permit the project to determine the instructional utility of the materials produced for the general elementary teacher who has had no training in anthropology. This is considered to be an important point, since it is unlikely that many elementary teachers will have had, or will acquire, systematic training in anthropology.

Systematic project-teacher contact calls for a six-week institute in anthropology each summer for the twenty-eight new experimental (i.e., trained) teachers who will field try materials the following spring. In summer 1964, fourteen first grade and fourteen fourth grade teachers received this training. Each May, after field trial, there will be a follow-up seminar at the Georgia Center for Continuing Education on the University of Georgia campus, which will involve both the experimental and control (i.e., untrained) teachers. A cooperating first and fourth grade teacher who remains with the project throughout the period of field trial will thus have four post field-trial contacts for feed-back and evaluation purposes; the seventh grade teacher, however, will have only one. This difference in phasing and contact, providing for more intensive experimentation at the lower levels, reflects a pre-project judgement that it will be more difficult to select, organize, and prepare materials for the lower grades than it will be for the higher grades.

The curriculum model being utilized is that of "structure of a discipline," modeled after a local interpretation of what is thought might be implied by Bruner.

Task analysis, as well as symbolic theory, indicates that the three essential components of a field of knowledge may consist of the following elements: (1) the key words, labels, names (concepts) peculiar to the discipline or used in a technical sense by that discipline; (2) the explanatory statements concerning the key words or the descriptive statements or propositions using the key words; and (3) the illustrative or idiosyncratic material used to clarify, distinguish, interpret, contrast, compare, and make the necessary distinctions which support the taxonomy and also which serve to limit, fix, and set the concept.

This model is not original, and, in effect, follows the traditional topical outline for descriptive exposition. The methodology, simple on its face, nevertheless has presented three unexpected difficulties. The first might be described as the analytic task of conscious and systematic conceptualization, which requires a re-examination of a subject matter in its complex interrelationships and not a mere mechanical reduction into topics. The second level of propositional and descriptive statements, which serve both an analytic and synthetic function, are thus crucial in the delimitation of structure.

The second difficulty is the degree of explicitness necessary to delimit structure, especially since reduction below the level of major premises initially appears to verge on the tautological. And finally, the illustrative material, which also at first seems redundant, begins to emerge as the necessary concrete material to give the higher order abstractions a point of reference and connotative meaning. Illustrative material, notwithstanding its third level appearance in the structure, must be selected to illustrate types of idiosyncratic behavior so that the major concepts are reinforced and not engulfed by the needed redundancy. Initial experiences of the staff with the process of structuring suggest that the teaching of concepts, so popular now in the literature, would be mere memoriter transmission without a firm inductive base of factual material from which they are abstracted. It is nevertheless believed that a careful ordering of the three elements described affords a workable model by which to organize "structure."

After the development of the "structure of the discipline," however, two additional tasks remain before the actual writing of the material. The first is the choice or selection of that part of the structure of the discipline appropriate to the curriculum objective; the second is the sequence of that structure for the various learning levels. The limitations of instructional time require that certain elements of a subject be excluded, and thus a decision must be made as to the relative importance of the ideas for elementary instruction which have been delineated in the structure. A second task is the arrangement of the components abstracted from the total structure for each grade level in such a way as to both maintain the unity of the discipline's structure as well as taken into account the relationship of the material to different grade levels. First judgments must necessarily be based on ad hoc judgments, with needed revisions following field testing.

In order to avail itself of the best scholarship in the fields of cultural anthropology, physical anthropology, archeology, and linguistics, the Anthropology Center recently held a seminar at the Georgia Center for Continuing Education in which the anthropology consultants reacted critically to an initial proposal for a structure of anthropology, selection of content appropriate for the elementary level, and a sequence for the arrangement of materials. The Center is now revising its original draft of structure on the basis of this expert advice.

The Anthropology Curriculum Center at the University of Georgia is a cooperative project involving staff from the department of anthropology and the College of Education. Marion J. Rice, assistant to the dean, College of Education, is project coordinator; Wilfrid C. Bailey of the department of sociology and anthropology is co-director.

Other members of the staff include: Dr. Francis Clune, anthropology; Dr. Warren Findley, evaluation; Dr. Oscar Jarvis, elementary social studies; Dr. George Newsome, logic; Dr. Albert Kingston, reading; and Miss Juanita Skelton, visual materials.

Public School consultants are Mrs. Ruby Crowe, social studies coordinator, Fulton County School System; and Mrs. Miriam Clum, curriculum director, Clarke County School System.

Anthropology consultants are Dr. Paul Bohannan, Northwestern University; Dr. Thomas A. Sebeok, Indiana University; Dr. Jesse D. Jennings, University of Utah; Dr. Frederick S. Hulse, University of Arizona; Dr. Asael T. Hansen, University of Alabama; and Dr. Charles H. Lange, Southern Illinois University.

Harvard University
Donald W. Oliver, Director

Introduction

The project is based on a conviction that the analysis of public controversy should command the primary attention of social studies curriculum in public secondary schools. The rationale for this position has been elaborately developed by Oliver and Shaver (1962). The curriculum we envision differs in a number of ways from other curricula with regard to the ultimate objective. The purpose of our effort is not to train students to ask and answer the kinds of questions considered by historians, economists, sociologists, or lawyers; it is not to teach the "structure" of any particular discipline or of the disciplines in general; it is not to teach the substantive findings of the disciplines; nor is it to teach "critical thinking" as the skill is commonly defined. This is not to say that findings and the intellectual processes of the disciplines will be excluded from the curriculum. On the contrary, concepts, models, and materials from the social sciences will be included at almost every step -- in order to illuminate, clarify and provide analytic power for construing social disputes and assessing avenues to their solution. The most broadly stated objective is to train students to examine and analyze, through discussion and argument, the kinds of disputes that give birth to social conflict. By considering a variety of situations throughout history and across cultures, by viewing the situations in terms of various social science concepts and theories, and by examining and weighing various methods for reaching and justifying positions, students will hopefully gain certain powers of analysis that will aid them in discussing value dilemmas on which public controversy thrives.

Social controversies may be construed in several ways.

1. They may be seen as instances of universal problems, phrased, for example, as (a) the use and control of violence; (b) the attainment and maintenance of a certain standard of living; (c) the distribution of privileges; (d) the balance between public conformity and public dissent; (e) the preservation of private autonomy.

2. Disputes may also be construed in terms of legel-ethical categories such as property rights vs. general welfare, constitutional vs. unconstitutional, or due process vs. unjust search and seizure.

3. Further, the verbal arguments that reflect and ignite the disputes may be viewed analytically, i.e. the extent to which general value judgments, definitional ambiguities, or conflicting factual claims form the basis of the issue in question.

4. Finally, the disputes may be seen as illustrating various themes and concepts drawn from social science theory and findings; e.g. repressive measures used by societies against deviants who threaten the social order; the problem of maintaining workable pluralism among different ethnic or religious groups who cling to former identities; or the psychological bases of demagoguery.

Disputes studied in the project will be viewed in terms of these broad and different dimensions.

The activities of the project are divided into three phases: Development of Materials; Teaching; Research and Evaluation. Since each phase has objectives and plans specific unto itself, we shall discuss them separately.

Development of Materials

Materials developed by the project will be almost entirely in the form of the printed word. We would prefer to have in addition a balance among films, slides, tapes, programmed instruction, etc., but our resources presently are not adequate to develop these aids. The written materials may later be augmented in a variety of ways to communicate more effectively with students. Most of the materials will be case studies that describe situations and dilemmas in concrete and dramatic style. Cases take many forms: autobiographical and biographical accounts, journalistic narratives, excerpts from fiction and literature, court opinions, historical vignettes, etc. The purpose of a case is to communicate the concrete, raw data of a situation, to pose a problem in terms relevant to the student, with a minimum of analytic or interpretive material. Rather than being explicitly defined and developed within the cases, social science concepts will be introduced via dialogue with the teacher. By establishing the concrete contexts for controversies, without explicitly teaching the more abstract generalizations, the case materials allow teachers flexibility in deciding what concepts and themes to develop in the dialogue.

The materials are tentatively organized into the following units:

Level One: Introduction to Social Problems: The Individual within a Community

The general purpose of Level One is to present a few cases, illustrative of the general problems to be considered throughout the curriculum, along with legal-ethical, analytic, and social science themes and concepts used to deal with the general problems:

1. A series of cases to demonstrate general problems:

    Use and Control of Violence, e.g. "The Mutiny Act"
    Standard of Living, e.g. "The Coal Mining Hills of Kentucky"
    Priority of Privileges, e.g. "Elmtown's Youth"
    Public Conformity and Dissent, e.g. "John Brown"
    Privacy, e.g. "The Amish"

2. A few cases in more complex settings to illustrate the role of humans as instrumental to change within a social system.

Level Two: The Development of Anglo-American Legal and Political Institutions

Having raised a series of problems in Level One, Level Two seeks to show, again through a series of cases, the kinds of legal and political institutions that have been developed to deal with the sorts of issues raised in Level One.

1. Anglo-American developments from Roman England to the American Civil War: the growth of Constitutionalism.
2. Selected themes and concepts illustrating American political process
3. Selected themes and concepts illustrating the American legal process

While Part 1 will establish the more formal, institutional arrangements, Parts 2 and 3 will introduce some of the more informal realities in the functioning of the institutions.

Level Three: The Impact of Industrialization: Selected Topics in U. S. History

Having outlined the institutional structure in which social conflict is handled, we next present examples of more complicated problems and examine the process by which the American constitutional system dealt with these issues. The historical context is generally between the Civil War and the Great Depression.

1. The Farmer
2. The Corporate Industrial Complex
3. The Immigrant
4. Labor
5. Race Relations

Level Four: Crises in World Societies: Five Societies in the 20th Century

The purpose here is to examine periods of crisis using as points of view the perceptions and values of those living in the society under study. The students' own, more Anglo-American, point of view will be discussed in the light of different cultural norms and institutions.

1. United States - the Great Depression and New Deal
2. U.S.S.R. - the Bolshevik Revolution through the mid-thirties
3. Germany - the Rise of Nazism
4. China - Pre-20th century stability to Communist Revolution
5. Kenya - Colonialism and Independence

Level Five: Introduction to the Problem of International Order

The purpose here is to move from domestic issues to the general problem of world peace and order. Historical background will be given to demonstrate problems of peace-keeping, national sovereignty, and international law.

1. Colonialism and the Balance of Power
2. World War I and Versailles
3. Diplomatic History through World War II
4. Nuremberg Trials
5. Cases on the Problems of International Order: Israel, Hungary, Berlin, Cuba, Vietnam, Panama, South Africa

Level Six: Contemporary Problems: Attaining the "Good Life"

This will be the most open-ended part, giving students the opportunity to reconsider, redefine, rethink issues raised earlier, and to consider anew the basic dilemmas of modern man. The problems and dilemmas might be categorized as:

Economics (production, employment, population, technology)

Race and Ethnic Assimilation - Isolation - Autonomy

Politics (sovereignty and the consent process)

Philosophical, Psychological, and Personal Fulfillment

The materials for the six levels will be extracted from a variety of published sources. Where no appropriate materials exist, new cases and units will be written. The project staff has a consulting group of scholars in the various fields to assess accuracy, balance and relevance of materials prepared by the staff.

Teaching the Curriculum

In fall, 1964, the project staff will begin to teach the curriculum to a group of "average" ability tenth graders in a public school in the Boston area. The program will last for three years: tenth, eleventh and twelfth grades. Many of the students will continue their formal education beyond twelfth grade, primarily in commercial courses, junior colleges, etc., but not in the more selective high-status liberal arts institutions. Teaching conditions will be "ideal" in comparison with usual arrangements. The project staff of four experienced teachers will have sixty students, with periods scheduled flexibly so that both large-group and small tutorial instruction will be possible. The project staff will plan and evaluate as a "team." The basic posture of the staff teacher will be that of an inquirer and clarifer, not a "truth-giver." Great emphasis will be placed on a continuing dialogue with students, and the stimulation and moderation of argument. The discussions will focus on several general problems: the justification of legal, ethical, and political positions; the appropriate use of particular social science concepts; the induction and deduction of conclusions from given pieces of evidence; the valid use of reasoning strategies. In addition to the staff, other teachers in the experimental school will use the curriculum in their regular classes and participate in planning and evaluation with the staff.

This curriculum relies on competent, imaginative teachers with a particular kind of training consonant with certain attitudes toward learning and social studies curriculum. The curriculum could not be effectively used or disseminated on a national basis unless training institutes were established and teachers trained specifically in the use of this curriculum. Such an institute is planned on a small, pilot scale for the summer of 1966. The project does not intend to produce and distribute materials in a crash program designed to revolutionize social studies instruction throughout the country. We feel that much research must be done before the utility and validity of our approach can be assessed, much less established. That is, we will not be able to make conclusive comparisons of our approach vs. others on several variables. In this sense we do not intend to produce a finished product. Nevertheless, materials will be made available for those who wish to experiment with them.

Research and Evaluation

Apart from conventional attempts to evaluate mastery and application of content, the project is mainly interested in two areas of more original research:

1. Content Analysis of Oral Discussions

   A systematic observation scheme has been devised to analyze discussions on controversial issues (Oliver and Shaver, 1962). Classroom discussions are tape-recorded, then scored according to a system of analytic categories that detects the frequency with which students make various kinds of statements (e.g. legal claims, general value judgments, definitional claims, etc.). Pre- and post-test discussions and interviews should reveal the degree of progress made by students in their handling of legal, ethical and political issues. The project will refine the scoring system and design it to detect such additional behaviors as the student's use of general analytic and social science concepts to frame a problem; and the extent to which he places contemporary problems in a variety of situational perspectives. By using an experimental-control design we will compare trained and untrained students in their ability to discuss controversial issues. Exploratory research will be initiated on cognitive styles and their relationship to the students' discussions of public controversy.

2. Personal Construct Analysis

   The project intends to explore specific constructs and construct systems through which students view the world in general and the contents of this curriculum in particular. The work of George Kelly (1955) provides impetus for this line of research. This will involve the refining and adaptation of methodology in the assessment of constructs. Findings in this area can also be used on a comparative basis between experimental and control groups, with pre- and post-testing. Our concern for this research is spirited by a suspicion that until we are better able to describe the ways in which students view the world, we will be unable to communicate with them successfully in the classroom.

3. In addition to the above concerns, two types of standardized tests will be administered:

   a. Tests covering the content areas (U.S. History, Geography, Civics, etc.) normally taught in social studies courses. This will give an indication of how much information students lose or gain in the experimental curriculum, compared to conventional curriculum.

b. Yearly tests of general educational development in the social studies (e.g. the STEP series of E.T.S.). Experimental and control groups will be compared on these measures also.

Although the standardized tests appear insensitive to the kinds of behaviors we are most interested in, we shall administer them and analyze results in order to answer those who ask, "Have the students learned the factual background material; do they have the basic fundamentals, etc.?"

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University of Illinois
Ella C. Leppert, Director

Purpose and Procedure

The Social Studies Curriculum Study Center at the University of Illinois High School has as its objective the development and dissemination in public schools of the first three courses in a sequential junior-senior high school social studies program. These three basic courses for the secondary school social studies will be part of a five year sequence designed to contribute to a program that helps students develop understanding of: (1) the basic structure of man's social order and how this social order relates to the individual in his own and other cultures; (2) the dynamic nature of cultures and the role of the individual in relating himself to cultural change; (3) cultural diversity -- that with increasing world unity there is also room for diversity. When a social studies program confronts students with the recurring and persistent problems and questions common to most cultures and periods of history and fosters critical analysis and mature generalization, students will be better able to analyze and deal with disruptive and complex problems that accompany social change.

The development of the three basic social studies courses emphasizes the selection, in consultation with academic specialists, of key concepts and generalizations necessary for understanding man's relationships to his social, economic, and political institutions at various points in time and in selected Western and non-Western cultures including our own, key concepts and generalizations are ordered in a logical sequence and introduced in an ascending hierarchy from the concrete to the abstract as work progresses through the three courses. In developing the new course materials, emphasis is placed on developing teaching strategies, in consultation with specialists in learning theory, that encourage students to arrive inductively at the concepts and generalizations, and to develop skill in analysis. Instructional materials appropriate to teaching the key concepts, understandings, generalizations, and skills in social analysis are selected using the best of existing materials and developing new materials that facilitate achievement of the objectives of the new social studies program. Evaluation instruments appropriate to measuring the degree to which content, materials, and procedures fulfill the objectives of the proposed social studies program are developed concurrently with the new instructional materials. As the new courses are tried out in University High School, pilot and cooperating schools, a variety of specially prepared evaluation instruments and techniques are to be used to obtain data that will be used in preparing successive revisions of the course materials.

The procedures to be followed in the development and dissemination of each of the three courses involves four stages: (1) planning, in consultation with academic specialists, of the new course materials which will then be tried out in University High School; (2) the first revision of the new course material together with evaluation instruments and teacher education materials and tryout in a small number of selected pilot schools; (3) the second revision of the proposed course and evaluation instruments and tryout in a larger number of cooperating schools; (4) further analysis of selected data from trial in pilot and cooperating schools and publication of the new course materials.

The New Courses: Work Done and Underway

Priority in the work done to date has been the development and teaching of the foundation course in the three year social studies sequence. Beginning with a study of man's social institution, the family, the student examines the American family today using the methods of the social scientist wherever appropriate. Then by examining the New England colonial family, historical changes are identified. Reasons for these changes and consequences for the family and for society are analyzed. The next step is to introduce the student to the extended family system in a village in East Punjab of India. Making use of selected primary source materials including pictures, anthropological reports, and tapes, students identify similarities and differences, the reasons for these similarities and differences, and the consequences of this kind of family organization for the Indian family and society.

The same general pattern is followed for the units on man's economic and political institutions starting first with our own society in the present, in an earlier period of time, and then using selected models of other societies, students deepen their understanding of similarities and differences among cultures, and the dynamic nature of institutions.

The new materials on the family for the first course including student and teacher manuals are being tried out in a small number of cooperating public schools. Evaluation materials are being developed and used in teaching the materials in University High School and the pilot schools. The new materials on the economic unit for Course I have been taught for the first time in two junior high school classes at University High School and the revised edition will be tried out in selected public schools this year. Instructional materials for the political unit were taught in University High School this year (1964-65). The new materials for Course I have drawn on sociology, economics, political science, and history for concepts and generalizations.

The first and second tryouts of the new course material suggest that the effectiveness of the inductive approach depends in large measure on the sequence in which materials are introduced, and the ordering of concepts and generalizations. That is, in the study of the family and the economy, the materials begin with the concrete and move to the abstract; from the simple to the complex. Similarly, learning experiences are built into the new materials that require of the learner increasing skill in logical reasoning, that is, arranging items in a series, classifying, separating out variables, identifying relationships among variables, and dealing with inverse relationships. The development and use of instructional materials in the foundation social studies course that provides these kind of learning experiences help students develop and reinforce those mental operations essential to logical reasoning and dealing with abstractions.

Evaluation materials are viewed as an integral part of the new course materials. Evaluation specialists, in consultation with staff members, have identified key understandings, situational perspectives, and attitudes posited as course objectives. A pre-test reflecting these central course objectives has been constructed and administered. A parallel form of the pre-test is being developed to be administered as a post-test following course instruction. Data derived from the pre- and post-test administrations, particularly item-analysis data, will provide partial evidence relevant to growth in the achievement of course objectives.

Additional evaluation efforts are being directed to the development of unit tests by staff members and cooperating teachers. The function of the unit tests will be to communicate course emphasis to both teachers and students and to provide relatively immediate feedback concerning unit objectives. Additional course dimensions will be assessed by the administration and subsequent analysis of A Test Of Cognitive Preference in the Social Sciences and A Test On Understanding Social Science. These latter tests are in the developmental stage.

Course II

Building on the concepts introduced in Course I, the emphasis in the second course is on those historical developments that affected all mankind rather than on the individual experiences of one people or another. Selected simple cultures as well as advanced regional cultures in Eurasia and Indo-America will be studied to determine the way of life that man developed to cope with recurring problems that gave rise to social, economic, and political institutions. Approximately one-half the time in the second course will be devoted to a study of Western civilization, using concepts in geography, cultural anthropology, economic history, history, and art. Course II is being planned to help students develop a global frame of reference for understanding the development of man and his institutions.

Experimental materials on emerging civilizations developed by the Anthropology Curriculum Study Project have been taught in two world history classes at University High School to identify concepts and develop teaching strategies most productive in teaching selected concepts about simple and advanced cultures, and cultural change. Art forms are being integrated into the new instructional materials and a teacher's manual with selected slides has been prepared. The new materials for Course II are being taught at University High School this year.

Course III

The third course as presently planned will focus on major non-Western cultures and Latin America. The approach will be to examine, first, the existing conditions largely in terms of economic, political, and social institutions in each of the regions studied, and then using selected events explain the historical origin and development of present day culture and institutions. Emphasis on the institutional organization and culture of each of the regions studied will require students to examine the values and goals held important by people of other cultures, to compare and contrast the institutional arrangements, and value systems of other regions with each other and with our own. Evidences of change, factors that promote and impede change, and the consequences thereof for man will be examined. It is hoped that this approach will help students "get inside" another culture and to better understand that the similarities and differences among cultures are not accidental but the result of environmental and historical differences. Materials for the third course drawn from geography, cultural anthropology, history, and area studies will include student and teacher manuals, selected readings, recordings, art slides, film-filmstrips, and transparencies.

Staff

Currently, the staff of the Social Studies Curriculum Center consists of three full-time and two part-time teacher investigators and two evaluators.

Fred S. Coombs, research associate assisting with the development and teaching of the new materials for Course I and consulting with teachers in cooperating schools.

J. Thomas Hastings, director, Center of Instructional Research and Curriculum Experimentation, University of Illinois, supervisor of the evaluation staff.

Evans Mank, research assistant responsible for developing and teaching the new materials drawn from geography in Courses II and III.

Roland Payette, research associate, responsible for developing evaluation materials and techniques in cooperation with staff members for the new instructional materials and analyzing the results of the tryout of materials in University High School and cooperating schools.

William Pulliam, teacher investigator assisting in the development of the new materials in Courses II and III.

Barbara Smith, research assistant with responsibility for assisting in the preparation and teaching of the new materials in Courses II and III.

Ella C. Leppert, project director, participating actively in the development and teaching of the new materials in Courses I, II, and III.

University of Minnesota
Edith West, Director

The Project Social Studies Curriculum Development Center at the University of Minnesota is developing a new curriculum for grades K-14. The work is being carried out by a team of specialists from education and each of the social science disciplines. Many other University professors in the various fields are serving as consultants and doing some writing. The regular staff was aided last summer by a group of classroom teachers as well as faculty members from smaller colleges and universities in the midwest. The Center is obtaining help from several state agencies. It has had the advice of sub-committees of the Social Studies Advisory Committee of the State Board of Education. It has also had the cooperation of the social studies research section of the Minnesota National Laboratory in the State Department of Education.

The Center is preparing a number of materials, including teachers' guides for grades K-14, a complete set of resource units for grades K-12, and sample instructional materials where such materials are needed. The resource units are being built to provide for pupils of differing interests, abilities, and backgrounds. These units will be far more extensive than typical units and will include exercises for developing specific skills. Staff members are developing sets of visual materials to be used in grades K-3 to supplement other teaching materials. At some levels, where reading materials for the courses are scarce or out of date, the Center is preparing written materials for pupils. In many cases these materials will be accompanied by special teaching guides, as supplements to the resource units.

Staff members have prepared a series of papers as a basis for developing the curriculum and for use in training teachers. Following a series of lengthy staff discussions, each social scientist wrote a paper on his own discipline in terms of the field studied, the types of questions asked, the method of gaining new knowledge in the discipline, the conceptual framework, and in some cases, conflicting theories in the field. The social scientists also prepared statements of what each thought most important for the citizen to know from his field. Staff members studied points of convergence and divergence among the social sciences. They developed several short working papers and two long papers on the social sciences as a whole. One of these attempts to clarify the referrents of common vocabulary from those social sciences which study the entire range of social behavior. This paper also identifies the key concepts which cut across the disciplines. Still another paper on "Concepts, Generalizations, and Theories" defines these terms and shows their interrelationships. It also discusses factors affecting the difficulty of concepts as well as their importance.

The staff considered far more than the social science disciplines as they developed their curricular framework. One project paper examines the relationship of values and the social sciences and lists the Center's behavioral goals in the affective domain. A paper on skills designates the skills to be taught in the social studies curriculum. Another analyzes the implications of learning principles for curriculum development. The staff sociologist prepared a working paper for staff use only on "Social Trends and Problems." The team also developed a list of organizing principles for selecting curriculum content.

Space does not permit mention of all of the organizing principles and assumptions which guided staff members as they developed a curricular framework. Needless to say, they were intent upon bringing the social studies curriculum up to date in terms of interpretations and emphases. This meant, to give but one example, a change in emphasis in political science from a structural to a behavioral approach. The staff believed the prime purpose of the social studies curriculum should be to develop citizens capable of coping with problems in the modern age. They found no dichotomy between this goal and that of teaching pupils sound social science. The goal did, however, seem to demand an increased emphasis upon the behavioral sciences and upon the non-Western world. The Center has tried to provide better balance among the disciplines than in the past. This has meant reducing the amount of time devoted to American history in the K-14 sequence. It has also meant giving considerable attention to ideas and materials from the field of anthropology. Indeed, the concept of culture becomes the unifying concept for the entire curriculum. This curriculum places heavy emphasis upon comparative study -- from a comparison of families around the world in the elementary grades to a comparison of total cultures (including their economic and social systems) in the senior high school.

The staff believed that any good curriculum must provide continuity and sequence for the study of concepts, generalizations, and skills. Greatest emphasis is given to concepts of the widest scope and applicability, to analytical concepts, and to other key concepts from the individual disciplines. Above all, the staff has tried to provide the development of thinking processes among students, including the ability to conceptualize for themselves, to apply generalizations, and to think critically.

In order to facilitate the sequential development of concepts and skills, staff members have made use of needle-sort punch cards. Each of the major generalizations dealing with a key concept has been placed on the front of a card, with supporting generalizations on the back. The cards have been punched for all of the concepts related by the generalizations, so that generalizations related to one concept can be sorted out quickly.

Tentative penciled notations on the back of the card indicate which units at which grade levels will be used to develop these generalizations. The same thing has been done for skills. By looking at a card, the curriculum writer can find out what has already been done to teach the major generalization or to teach the supporting generalization which he is to develop within a certain unit. He can then build in review and procedures for developing greater depth of understanding in the unit on which he is working.

Staff members have developed a tentative curricular framework, to be used as a basis for developing resource units and pupil materials for initial tryout. As materials are evaluated, some shifts may occur. At the present time, the staff envisions heavy emphasis upon concepts from anthropology, sociology, and geography in the primary grades, with the addition of many economic concepts in grade 4. Although they have rejected the typical expanding horizons organization, they have selected topics which are close to the lives of pupils and have provided a comparitive study of these topics in selected places throughout the world. Although pupils will study such a familiar topic as the family, for example, this topic serves as a vehicle to teach certain concepts. The purpose of the units on families in many parts of the world and in different eras is to teach a series of concepts related to culture (such as cultural diversity, uniqueness, cultural universals, norms and values, learned culture, and culture change) as well as concepts related to social structure (such as role) and social processes (such as socialization).

In the middle grades, the tentative curriculum calls for greater focus upon the separate disciplines of geography and history. However, key concepts from the other disciplines are crucial to the study of these courses. Thus a course on geography uses case studies of the changing use of the same physical environment in terms of changing levels of science and technology and changing cultural assumptions. The American history course draws upon what pupils have learned earlier about the concept of culture and expands upon it with greater emphasis upon culture contact and culture change.

The present framework calls for a heavy emphasis upon aspects of the behavioral sciences in the junior high school years. Outwardly, several of these courses appear to be separate disciplinary courses. Actually, they all draw upon concepts from the other social sciences. The staff is placing heavy emphasis in these courses upon materials which will provide the concrete cases from which pupils can conceptualize and generalize for themselves. For example, staff members are developing a series of cases for the study of the political system and simulation games for the study of our economic system.

At the senior high school level, the Center's curricular framework calls for somewhat less outward divergence from typical curricula. The actual courses, however, bear little resemblance to typical courses in these grades. The senior high school course in American history, for example, will be articulated carefully with the middle grade course in order to eliminate duplication. It will be highly analytical, will use what pupils have already learned about the economic, political and social systems and will help pupils study the effects of cultural assumptions upon the total social system. The senior high school program provides for a year of area studies, which will draw heavily upon anthropology as well as the other social sciences. This course is placed after the study of the political, social, and economic systems in the United States to make easier comparisons with systems in other parts of the world. Senior high pupils will study a series of problems facing the United States at home and abroad. These problems cut across disciplines, but the course will try to help pupils see how they can use the different disciplines in analyzing the problems. They will be asked to identify the kind of help which each discipline can give, the kinds of questions which would be asked by each discipline, and the kind of analysis which would be made by each. It is the belief of the Center's staff that such a course, if it focuses upon relatively few problems, can avoid the superficiality of many courses in which pupils have had little or no previous encounter with the behavioral sciences.

The courses for the junior college level have not yet been specified. However, the staff plans to suggest a junior college program which will build upon what pupils have learned in the earlier years.

Materials prepared by the Center will be tried out in the schools, revised, and evaluated more carefully during the last year of the project. Some of the Center's materials are being used during the present school year in University schools, while others are being written. Using feedback from the teachers working with the materials, staff members will revise materials for use the coming year. A teachers' institute, to be held during the summer of 1965, will train teachers to use the new materials. These teachers will try them out on a wider scale during 1965-66. Staff members will work with teachers in the field, will revise materials in the light of teacher reactions, and will prepare additional materials. They will also develop tests on the cognitive aspects of the curriculum. Another institute will be held for teachers during the summer of 1966, and these teachers will help in the careful field evaluation of materials at selected grade levels during the following year. If further funds can be obtained, the staff will conduct more extensive evaluation of the materials at the other grade levels. The Center also hopes to obtain additional funds at a later date for demonstrations and institutes.

At present, the Center's materials are not available for distribution. People on its mailing list will be notified of the availability of materials after the Office of Education has worked out a policy guiding their distribution.

Northwestern University
John R. Lee, Director

Under its contract with the United States Office of Education the Social Studies Curriculum Study Center at Northwestern University hopes to develop materials which will help implement a new approach to the study of American society. Specifically the Center intends to integrate concepts from the social sciences into the study of American history in grades 5, 8 and 11. The project hopes to eliminate much of the present repetition in these three grades.

Two kinds of writing activities have been undertaken. First, a team of scholars, under the chairmanship of Clarence Ver Steeg, professor of history, has begun working on the production of course materials for American history. The team includes specialists in economics, sociology, political science, and geography. The team hopes to produce by 1966 a basic set of course materials which will be adapted for use in the elementary, junior high and senior high school courses in American history.

Second, a number of short-range writing teams have been formed to deal with specific topics and problems. The task of these writing teams has been to develop materials to deal with specific aspects of American society. Plans are to incorporate these materials and findings into the courses being written by the long-range team.

At present the major emphasis in terms of implementation of the Center's objectives is on the short-range materials and studies. In the elementary grades, Gene Rooze, a fifth grade teacher in the Evanston Elementary Schools, along with Professor Harold Williams of the Northwestern economics department, have produced a sixty-page case study on dairying to illustrate the concepts concerning the functioning of local industry in the American economy. This elementary school team has also produced a thirty-page unit on introductory concepts in economics, particularly those of the factors of production and the division of labor. The illustrative material for this unit is drawn from medieval England. Also in the elementary grades, Edward Espenshade, professor of geography, has developed and tested an approach to pupil interpretation of various maps of an area and to pupil production of written explanatory descriptions of the area.

For the junior high grades, James Becker and Howard Mehlinger of the NCA Foreign Relations Project have prepared a number of discussion lessons on American values aimed at the potential drop-out student. Also in the junior high division, a principal in the Skokie Public Schools, Ted Kamatos, has prepared a preliminary draft of materials dealing with major concepts in economics.

In the senior high grades, five units on recent American history have been produced by Thomas Bonner, chairman of the department of history at the University of Cincinnati, and Lee Anderson, assistant professor of political science and Cleo Cherryholmes, assistant director of the Center, have completed initial plans for the preparation of a "Handbook of Social Inquiry." This handbook will be used with twelfth grade problems of democracy courses to introduce students to such techniques of social research as survey research, content analysis, and the use of simulation as a research tool.

Having come this far, our present plans include the continuing work of the long-range team and the continued editing and distribution of the work of the short-range teams, and testing these materials in the schools. Initial planning will begin on the construction of three games, one each in politics, economics, and history to be used as simulation activities in grades 5, 8 and 11. Daniel Powell, clinical assistant professor in the School of Education, will prepare materials on historiography and lessons using original documents, eye-witness accounts, and other sources on the American frontier. These materials will be used with upper elementary and junior high grades.

Ohio State University
James R. Shaver, Director

Objectives

The general objective of the Ohio State Economics Curriculum Study is to prepare a semester course for secondary school students based upon economics as a discipline. This involves setting forth for the teacher the structure of economics -- the major categories and the basic analytical themes that run through the subject -- to be used as the basis for more effective teaching of economic concepts and reasoning. The three major groups of ideas upon which the curricular materials are being based are: (1) scarcity and basic economic decisions; (2) the flow of goods and services and the flow of money; and, (3) the coordination of economic activity. The basic analytical themes are: (1) marginal analysis, and (2) institutions.

The purpose is not to write an economics textbook, but to provide the teacher, in a sequenced outline, the basic conceptual structure of economics. It is hoped that the outline will demonstrate to the teacher how grouping concepts into subdivisions of the subject can help the student to appreciate the structure of the subject and understand it better. By making clear how one economic idea is linked to the next and how the subject unfolds as one goes from one group of concepts to the next, this structured approach to economics should make the student better able to "re-discover" the economic concepts, follow the reasoning, and retain the orientation of the discipline.*

Procedures

The Teacher's Guide being prepared will contain a sequenced outline of the structure of economics serving as the basis for our curricular work. The Guide will be organized into several units based upon the major conceptual categories and analytical themes. Each unit will contain, along with a presentation of a concept in the structure and its relations to other concepts, "comments" which will attempt to help the teacher anticipate instructional problems. Necessary vocabulary, generalizations, and mathematical concepts and skills will also be noted. And, suggestions as to teaching situations and materials will be included. Materials are also being prepared for the students. These will not include the sequenced outline, but probably will include written dialogues, case studies, games, and other materials that the teacher may wish to use, as well as selected readings expanding on the unit concept.

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* This statement of objectives is based upon: Meno Lovenstein, Teacher's Guide -- A Preliminary Draft, Occasional Paper No. 64-167, Social Studies Curriculum Center, The Bureau of Educational Research and Service, The Ohio State University.

The work of the Economics Curriculum Study is primarily a team effort. Our resident scholar in economics, Meno Lovenstein, is preparing the basic sequenced outline based upon his structuring of economics. He is being assisted in the preparation of the rest of the Teacher's Guide by two research associates both of whom are experienced secondary school social studies teachers. They also are preparing the Student Materials. In addition, affiliated with the project are an educational philosopher, an evaluation specialist, a social studies curriculum specialist, as well as the director of the Social Studies Curriculum Center. Each concentrates his efforts on his specialty, e.g., goal formulation and explication, instruments for assessing learning, the appropriateness of the teacher's materials, but each also joins in general critiques of the work of the economics specialist and the two research associates. Also, continuing relationships are being set up with teachers in the local area who will provide a source of teaching ideas and feedback on the appropriateness of the materials for themselves and their students. In addition, economists from other universities or organizations will be invited to the campus to critique the structure of economics as developed for teachers by the Study, and a conference of social studies teachers will be held to get their reactions to the Teacher's Guide and the Student Materials. Then the Guide and Materials will be tried out in ninth-grade classrooms with both evaluation of learning and further revision as ends.

Present Status

Much time and effort has been put into clarification of the structure of economics and the goals of the Curriculum Study. The sequenced outline for the Teacher's Guide and the accompanying comments and suggestions are partially completed. Work has begun on the Student Materials, but is in its preliminary stages so that the exact form they will take has not yet been determined. Neither the Guide nor the Student Materials, then, are ready for distribution yet. The conferences with economists will be started within the next three months or so, and the conference of social studies teachers will be held in the early spring. The major classroom tryout is scheduled for the fall of 1965. The measures used in the physical and biological science and mathematics projects as well as available economics tests are being reviewed as a basis for devising testing situations more appropriate to the measurement of the understanding of the structure of economics that is the basis for the curricular materials. In general, the study is progressing well, and the economics course should be ready by the 1966 contract termination date.

Personnel

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Roy A. Price, Director

Although social science research has made a significant contribution to the study of human behavior and vast areas of new knowledge have been opened up in recent years, there has been no comprehensive revision of the social studies curriculum since that following the report of the Commission on the Reorganization of Secondary Education in 1916. The Curriculum Center in the Social Studies at Syracuse University is currently engaged in a five year project to provide the underpinnings for just such a revision.

The specific objectives in this effort are (1) to identify the major concepts from the social sciences and allied disciplines that appear to be appropriate for an elementary and secondary program in the social studies, (2) to examine the major workways of these disciplines, such as organizing principles, readiness to pursue empirical data, willingness to discard unwarranted assumptions, awareness of the differences between solid evidence and simply informed opinion, and subordination of subjective preference to objective evidence, and (3) to develop and evaluate at three grade levels illustrative materials for use by teachers and students that effectively translate the concepts and workways into classroom practice.

Progress to Date

During the year it has been in operation, the Curriculum Center has held a series of seminars with the staff of the Maxwell Graduate School of Citizenship and Public Affairs and the School of Education to discuss and clarify the issues involved in this undertaking before developing position papers in each of the disciplines. Perhaps it would be wise at this point to review two of the more important issues that have been raised, simply by way of illustration, and, more importantly, to indicate the decisions made with respect to them.

Sources for the Social Studies Curriculum

No one would dispute that history, geography and the other social science disciplines represent legitimate sources for the social studies curriculum. The issue here is to what extent the Center should go beyond those traditional sources and include some of the allied fields of philosophy, law, psychiatry, and psychology. The decision was made to include these disciplines, at least during the early stages of the Center's work with the thought of identifying the unique contributions they might make to the social studies.

Science and Social Science

An issue which is inevitably raised when social scientists discuss their disciplines is whether the social sciences are indeed sciences that employ the scientific method in the search for new understandings. The two extremes on this issue are probably typified by the natural science position on the one hand and the normative position on the other. In a nutshell, the social scientists who take the natural science position assert that man is a part of nature and his social behavior must be studied by employing the methods of natural science. On the other hand, those who take the normative position assert that social science must deal with normative or ethical questions as well as scientific ones and that any attempt to make distinctions between the two is ultimately doomed to failure. In this view, the purpose of social science is to bridge the gap between scientific and normative knowledge.

The position of the Center is that a similar range of views probably exists within each of the social disciplines and that it would be appropriate to include at least two representations from this range. Thus, the Center would identify both the scientific workways and other workways within each discipline.

Basic Concepts

As a result of the discussions which took place in the seminars, the Center entered into contracts with nine individuals to produce position papers on the basic concepts in history, geography, sociology, anthropology, political science, economics, law, philosophy and psychiatry. While psychology and social psychology were not included in the first round of contracts, they are also being considered as sources for the curriculum. All but two of these papers have been completed. The Center staff is now in the process of abstracting from these and other sources the concepts that appear appropriate for the elementary and secondary curriculum in the social studies.

Social Science Workways

In addition to resolving the general issues, the staff has devoted some attention to the workways or methods of the social sciences. While still tentative, its present formulation of these workways is roughly divided into five categories. These are indicated below with a brief statement of what is meant by each.

Guiding Principles

By guiding principles is meant those rules of conduct which either consciously or subconsciously direct the efforts of the social scientist. Since they represent predispositions to act in certain ways, they are more in the nature of attitudes than they are technical skills. A question which bothered the staff from the beginning of its discussion of guiding principles was whether these differ for different components of the disciplines. Typically, the social science disciplines are thought of as having at least two and perhaps three components. There is the scientific component which deals with questions of fact. There is the normative component which deals with questions of value. Finally, there is the practical component which draws upon the previous two in order to arrive at and implement decisions related to practical social problems. Certainly with the latter component and probably with the former two it would be incorrect to think of them as isolated entities. While some social scientists concentrate on only one of these, many more are concerned with all three. Nor do they subdivide their work into neat categories. More typically, they simply work on the problems they are interested in from whatever toe hold they can get on them. These three areas are treated separately here for analytical reasons only, with full regard for the fact that they may be inseparable in actual practice.

Now let us return to the question of what guiding principles apply in each component of the discipline. Our observations thus far suggest that while some are unique to specific components, many are equally applicable to all three components. We hope, of course, to resolve this question at some later date. For now, the four principles below will serve as illustrations without attempting to relate them to specific components.

1. Objectivity: The methods used and conclusions arrived at are free from such personal and cultural biases as race, color, creed, nationality, religion, moral preference and political predispositions, to the extent that the individual can control these factors. The extent to which this principle has been adhered to is judged not only by the individual but by the scholarly community as a whole. This principle and all the others is best represented by a continuum. It is not a matter of whether it is completely achieved or not but to what extent it represents a goal to be earnestly sought.

2. Skepticism: Evidence is not taken at face value but is examined carefully from a number of viewpoints before being accepted.

3. Relativism: The findings of a discipline are held on a temporary basis, always subject to future modification.

4. Respect for Evidence: The pertinent evidence is evaluated for its thoroughness, validity, and significance.

Several other principles are currently being discussed. Once a complete list is identified, instructional materials designed to instill these principles or habits of thought will be developed for different grade levels.

Basic Orientation

The basic orientation of the social scientist has much to do with the workways he selects to examine the social phenomena he is interested in. The realist, for example, argues "what is out there" has its own order independent of man and that the task of social science is to discover that order. The phenomenalist, on the other hand, believes that the only order reality has is the order which man gives to it. To take an illustration more directly related to social science, Durkheim held that the determining cause of a social fact should be sought in the antecedent social facts and not among states of individual consciousness. Such basic orientations have important implications for the way in which a particular social scientist goes about his task.

Fundamental Processes

Perhaps underlying the work of all social scientists, and indeed all those engaged in inquiry of any kind, are a group of fundamental processes that are employed in essentially the same fashion from task to task. If these could be identified and ordered from simple to complex they would constitute a process structure for all social science disciplines. While the Center has not done enough work in this area to speak with any assurance, such processes as defining, relating, and classifying are among those we have in mind.

Tools, Techniques and Methods

This category of workways scarcely needs elaboration since it appears to be well understood by all. Among the items which might be so classified are interviews, questionnaires, content analysis, analysis of variance, experimentation, and the Rorschach Test, to name but a few of a very long list.

Methodological Concepts

The abstract generalizations that a social scientist uses in his discussions of methodology constitute the final category of our methods framework for the social sciences. These concepts stand in contrast to such substantive concepts as role, culture, anomie, and voting behavior. Illustrations may be chosen from such concepts as causation, probability, variable, controls and many others.

The five categories enumerated above are still tentative and are listed simply to give the reader the flavor of our thinking. Even if they are an accurate reflection of the process structure of the social disciplines, they may not be equally useful for the elementary and secondary schools. The basic orientation and methodological concepts are particularly suspect in this regard. It may be that any attempt to promote an awareness of methodological concepts, for example, at the secondary level, may actually hinder the learning of the fundamental processes or techniques, tools, and methods. Much more work needs to be done before we can begin to make that judgment.

Future Plans

During the academic year 1964-65, the Center expects to complete the identification of concepts and workways. In 1965-66, it will finish the initial construction of the illustrative instructional materials. The academic year 1966-67 will be devoted to the tryout, evaluation and revision of these materials. Finally, the last year will be used for analysis of the data and the preparation of a final report. Although the major emphasis in the last three years will be on the construction and evaluation of instructional materials, the concepts, and methods may also undergo continued refinement during this period.

THE ROLE OF THE EVALUATOR IN CURRICULUM RESEARCH

Garlie A. Forehand

In almost every formal curriculum development project there is a person responsible for the measurement and evaluation of the curriculum's effect upon student performance. Both the responsibilities and the professional backgrounds of these "evaluators," as they have come to called, vary from project to project. At the Curriculum Study Center Conference, the evaluators from Project English and Project Social Studies Centers met, along with six invited persons serving similar roles in projects in mathematics and the natural sciences. In addition to participating in meetings with the "subject matter people," they met in separate evaluators' sessions to discuss technical, strategic and professional problems encountered in their new and vaguely defined field.

Many of the technical problems raised in these sessions are discussed in the four invited presentations, by Edward J. Furst, Henry Walbesser, J. Thomas Hastings, and Hulda Grobman, who agreed to incorporate in their papers questions raised in the interchange that accompanied their presentations. This commentary by the chairman of the evaluators' meetings, focuses upon broader issues related to the role of the evaluator, and is intended to discuss, rather than to summarize, the topics that were raised. The discussion returned recursively to three inter-related issues: the nature of curriculum as a research variable, the behavioral definition of educational objectives, and professional responsibilities of evaluators.

Curriculum as an Independent Variable

Evaluation studies are often built on the model of a psychological experiment. The curriculum defines the independent variable, one level of which is the "experimental group," embodying the methods and philosophy of curriculum innovation, and the other the control or traditionally-taught group. This paradigm has been tried and found wanting by a number of evaluators. One difficulty is the impossibility of controlling or isolating the effective features of an experimental curriculum. Another lies in the attempt to define a control group that differs with respect -- and only with respect -- to the central innovative idea of the experimental program.

Though often treated as if it were unitary, a curriculum actually involves many elements, not all of which covary systematically: reading materials, sequences of instruction, training and indoctrination of teachers, teaching methods, teaching manuals, and teaching aids, to name a few. Each of these elements is in fact a variable, and does in fact take on different values in curriculum variation. Complexity of an independent variable does not necessarily preclude treating it as unitary in an experiment. However, such treatment can provide a result that might meaningfully be termed an evaluation of a curriculum only if (a) all of the relevant elements adhere in a unified whole and converge in their effects on student performance, or (b) any two instances of a particular curriculum (e.g. any two experimental classes) share only the relevant features while the others occur randomly. The first, the holistic assumption appears to be dear to the hearts of many curriculum developers. A number of evaluators report resistance to any attempt to vary curriculum features independently, on the grounds that they are all conceptually interrelated to define the essence of the new curriculum. Both sets of assumptions appear to be unrealistic in current curriculum study, in view of the apparent interaction of curriculum elements.

If we set aside -- temporarily or permanently -- the experimental psychology paradigm of curriculum evaluation, what strategies are available to us? Several suggestions have been made by evaluators, some of which are being explored in current studies.

1. An attempt might be made to isolate characteristics of a curriculum, and to vary them independently. For example, it is frequently observed that teachers in a tryout vary widely in their degree of endorsement of curriculum methods and objectives. Teacher attitudes are under the control of neither evaluators nor developers of curricula, but they might be measured, and their effects on performance studied. This might be an especially interesting variable to examine in interaction when a "new course" is being contrasted with an "old course." Other suggested studies would contrast use of new innovative materials with and without special teacher training, and different systems for determining the sequence of materials.

2. Greater use might be made of descriptive statistics to suggest the process of learning as related to curriculum elements. For example, a facet of behavior relevant to a curriculum emphasis might be assessed at several times during the school year, and plotted graphically against points representing introduction of curriculum elements. The investigation could look for trends, plateaus, changes of slope, and so forth. Such information could be accumulated over a number of course tryouts, and differences between years, teachers, schools and similar variables explored. Such analyses might lead both to more formal hypothesis testing and to quick feedback to course designers.

3. The investigator might concentrate upon intensive "clinical" studies of a small number of students. Such studies might have as their aim the development of a developmental psychology that relates to cognitive growth to educational experience. Both precedent and techniques are provided by the work of Piaget and of the numerous psychologists who have been influenced by him.

4. Rather than seek either to decompose or to by-pass curriculum as a variable, one might try to redefine it at the point of its effect, that is at the point of interaction between the teacher and students. As Walbesser emphasized in this conference, curriculum is behavior. The materials, lesson plans and other accoutrements of course development are relevant only as they are reflected in the behavior of teachers. This strategy calls for intensive classroom observation and the development of ways to classify teacher-student interaction (Medley and Mitzel, 1963), and could result in new and useful concepts of curriculum. Few current projects have the resources to carry out this plan in detail, but several are using procedures to learn more about this behavior. Some projects involve classroom visitation on a sampling basis, to determine whether teachers are pursuing the program outlined by course developers. Others are using systematic diaries kept by cooperating teachers, and intensive interviews with teachers. Finally, the assessment of teachers' attitudes is an economical way to tap a variable related to the teachers' behavior.

A second facet of the ambiguity of curriculum as a variable is the "control group issue." Many evaluation studies began with the premise that the experimental program should be parallelled by a matched control treatment using a "traditional method," although some reservations about the definition of such controls were voiced (Forehand, 1963; McKeachie, 1963). To judge from the 1964 Carnegie Tech Conference, the present trend is for evaluators to eschew control groups. All four of the presented papers argued that control groups have limited value, as had Cronbach in an earlier discussion (Cronbach, 1963). Among the arguments against using control groups are: (a) In many instances there are no meaningful comparisons between new courses and traditional courses. There are no traditional high school programs, for example, that teach structural linguistics, economics or population biology, as do some of the new curricula. (b) Control group studies cast the evaluator in the role of an academic Consumer's Union; they assume that the two treatments are constant and final, and thus do not contribute to their development. (c) The assumption that new and traditional programs are comparable may lead to emphasis on traditional, rather than modern objectives. (d) While the experimental curriculum is difficult to define, as we have seen, the control group is completely terra incognita. Traditional courses have no consistency in method or material, and the evaluator is seldom able to discover -- much less to generalize -- their points of variance with experimental courses. (e) Neither experimental nor traditional courses stand still. Many teachers have long employed some of the "innovations" of the new curricula, and the overlap will increase as the influence of curriculum development spreads. Moreover the experimental program evaluated today may well be revised tomorrow. (f) The use of control groups is highly expensive relative to the information about curriculum effects that they yield. And (g) many of the points for comparative evaluation are matters of value judgment.

These arguments speak convincingly against the mechanical use of the experimental vs. control / before vs. after design. One wonders, however, if the pendulum has not swung too far; there was strongly-voiced opinion to that effect in the conference. In particular, one may question whether the dethronement of the control group provides remedy for the real problems that control groups were intended to guard against. The proposed purpose of the control group is to prevent attribution of behavior changes to the curriculum when they are in fact attributable to other variables. Despite all of the above-cited deficiencies of control groups, the problem remains, and must be faced, if not eliminated, in evaluation research.

A distinction can be drawn between comparison-hypotheses and non-comparison hypotheses, and some meaningful evaluation hypotheses imply comparisons. A language program built upon structural linguistics might lead to the expectation that students will learn to recognize certain functional relationships among syntactic structures. There is no a-priori reason to believe that such skills will not be attained through increased experience with language and through study of "traditional" grammar. If the reasoning is extended to include related skills in composition, a comparison between programs is even more clearly called for. Similar points could be made with regard to attitudes toward public issues, and experimental reasoning about scientific questions. In these instances the objectives are extrinsic to the particular content of the course, as contrasted with intrinsic objectives such as the mastery of particular subject matter. In such situations statistical comparisons of groups may be appropriate. One way of making such comparisons that would avoid many control-group pitfalls would be to set up the study one year before introduction of the new curriculum, and use the pre-experimental year as a comparison course for the experimental year.

The testing of non-comparison hypotheses, in which the objective is unique to a particular treatment, must also take into account the dangers of falsely attributing effects to the curriculum. The perils of the single group pre- and post-test design are too familiar to permit its uncritical adoption (McKeachie, 1963). A resolution of this dilemma may accrue from recognizing curriculum as a process, a succession of events changing systematically over time. It is possible, in such a conception, to consider variation in curriculum, and covariation of curriculum and performance. Demonstration of such covariation would be convincing evidence of program effects. It should be noted that this conception does not imply any particular technique, such as correlation or covariance, for assessing such covariation. More complicated non-linear models would probably need to be worked out. The descriptive analyses discussed above could provide an elementary approach.

Behavioral Definition of Educational Objectives

The translation from educational objectives to evaluation instruments is always a point of contact, and sometimes a point of friction between evaluators and course designers. Walbesser reviewed a number of undefined cognitive concepts cited as objectives by curriculum developers. Evaluators have adopted various approaches to making the translation. Walbesser suggests as a goal the willingness of course designers to state their objectives in behavioral terms, and to accept such statements as defining their aims. Other evaluators, including Furst and Hastings are more willing to accept vaguely defined objectives on the part of the course designers, and see as the evaluator's role to internalize the educational objectives and construct behavioral items on the basis of inference concerning manifestations of desired cognitive changes. Most evaluators report difficulty in communicating with "subject-matter people" on these topics. In many cases the designer's reaction to the evaluator's behavioral statements is "That's something like it, but its still not quite what we're looking for."

Part of the difficulty in communication stems from the evaluator's tendency to equate behavior with items. The objectives stated by course developers refer to cognitive processes, to changes in state over time. Test items, in general, try to capture behavior at a given point in time. Processes implied by objectives like understanding, appreciation, sensitivity or critical evaluation sound mentalistic, because we have been unable to construct test items that seem adequate to define them. But it would be premature to conclude that they cannot be operationally defined. Several approaches discussed in the conference suggest that workable measures of process can be developed. "Tab tests" (Glaser, Damrin and Gardner, 1964) in which the subject makes a sequence of decisions, receiving feedback at each step, provide a means of studying problem solving process, and have recently been applied to educational evaluation (McGuire, 1963). Heath's work on cognitive preferences (Heath, 1964) approaches a facet of process, in its focus upon stylistic preferences at choice points. Other potentially useful approaches include in-basket tests (Frederiksen, 1962) and various kinds of games and simulations (Guetzkow, 1962).

Many evaluators agree that tests of achievement are not sufficient to assess the objectives of curriculum developers. Several proposals include plans to study such "typical performance" variables as attitudes, styles, and preferences, and the development of instruments for measuring such variables is one of the major technical problems of evaluation studies. The relevance of such variables is particularly evident in English, where appreciation in literature and style in composition are emphasized, but representatives of other fields also cite typical performance objectives, including attitudes toward public issues, interest in new scientific developments, and desire to continue study in a particular field. Heath's work on cognitive preferences in physics provides a model for measurement of some typical performance measures. Theoretical orientations like those of Gardner (1962), and others also suggest approaches.

Some evaluators go so far as to minimize the importance of "can do" measures relative to "will do" measures. Even when skill or knowledge is an aim of an educational program, it is sometimes argued that the skill or knowledge must be applied in voluntary situations in order for the objectives to be met.

The Professional Responsibility of the Evaluator

The new curricula are, for the most part, oriented toward subject-matter, and developed by subject matter specialists. Project directors often reject the contributions of "educationists," and distrust the behavioral concepts of curriculum that evaluators seek to inject. Evaluators thus confront a dilemma. Their training in psychological and educational research leads them to want to dissect and understand their independent variables; yet a curriculum is constructed on principles foreign to them, and its parts are interrelated in a way that makes them inaccessible to partitioning. How can the evaluator play an active role in curriculum construction under such conditions?

A requisite for impact of behavioral ideas is a behavioral theory of curriculum. It is clear that present theories of laboratory learning and cognition do not provide this requirement (Bruner, 1960). If curriculum studies suffer from the lack of a theory of instruction, they enjoy a unique opportunity to participate in its development. The activities subsumed under the rubric of evaluation can provide the empirical basis for theoretical development.

The shape of a behavioral theory of curriculum can only be guessed at, but some of the recurrent problems encountered by evaluators suggest questions to be put to the theory, and, as a consequence, directions for its development. We have noted that both a curriculum and its behavioral objectives are in fact processes. Process has been a much used concept in educational thought, but one that has resisted operational specification. Nowell and Simon (1961) point out that the physical sciences deal successfully with processes, using difference equations as a model for computing subsequent states from prior states of a process. In present cognitive research, they suggest computer models as an analogue to difference equations. Such a model specifies the rules for going from one state to another, and strives to simulate the behavioral processes being modeled. Over the long range, such models offer potential ways of stating theories of both curriculum and of outcome in disciplined ways, without sacrifice of their complexity. More immediately they can serve as a valuable paradigm for conceptualizing process.

Raw materials for the development of a behavioral theory of curriculum include models of process, the above-mentioned work on measuring problem-solving processes and the careful efforts of curriculum developers to develop specific statements of curriculum sequence and to understand the structure of their disciplines. All of these developments contribute to the goal of conceiving both curriculum and the behavior of students on-going processes, and of studying their relationships. Current curriculum studies offer an unprecedented configuration of resources: cooperating school systems, an atmosphere expectant of innovation, subject-matter specialists dedicated to examining their disciplines in relation to the learning of them, and behavioral scientists, in the guise of "evaluators," who are concerned with the problems of education. Each participant in these studies bears the responsibility for contributing not only to the improvement of teaching of a particular subject in particular circumstances, but also to the understanding of the process of education.

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THE PLACE OF EVALUATION IN A CURRICULUM STUDY

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I should like to review some of the facets of evaluation as they have been reflected in the evaluation activities of the Biological Sciences Curriculum Study (BSCS) over the last five years. While many aspects of such an evaluation are standard to research on curriculum, others raise new problems which may be common to other curriculum project evaluation activities.

The BSCS was set up for the purpose of improving biology education. It was not set up for the purpose of evaluation. In the BSCS, the participants are primarily high school biology teachers and college research biologists. These are discipline people, and it is their project. As the evaluation helps them implement their program, fine. But evaluation must remain a service function, and only as it remains that can it continue. Evaluation is not an end in itself, and there are times when evaluation aims must be set aside, since they interfere with the major project objectives. (For example, it might be relevant to the evaluation to obtain I.Q. scores for test teachers or to request teacher salary information, but both of these might antagonize some of the cooperating teachers and so jeopardize the over-all study aims.)

What Does Evaluation Include?

Some people feel that evaluation is synonymous with quantification. That is, if you cannot measure it, it does not exist. Certainly quantification is desirable, and quite often possible. However, simply because one cannot quantify certain aspects of a curriculum does not mean that the evaluation is not a good one or that the curriculum is not doing what we hope it will do. Some day we may be able to measure some areas that now defy quantification, but we still can do a good evaluation job even if we cannot show statistical tables relevant to all project goals.

Of course, evaluation includes written tests. And these may be multiple-choice tests, essay tests, tab tests, individual one-to-one testing and follow-up testing at a later date. But in the BSCS it also includes observation of students; it includes teacher, student, parent and administrator interviews; reports by teachers and reviews by specialists. At some future point, it may include case studies and interaction studies.

One very useful evaluation tool was the teacher weekly "feedback" reports, using a separate sheet for comments on each chapter of text and each laboratory exercise. (In this way, teacher feedback could be filed by chapter or exercise, and the persons revising the materials could study several dozen comments on the text section or the lab exercise before starting their writing.) Naturally, working with feedback requires careful interpretation. For example, if teachers report that the tests are completely inadequate, it is important to know why they reach this view. Does the teacher object because the test items are ambiguous or mis-keyed? Or is the teacher looking for a direct-recall type of question when the authors are deliberately trying to test for ability to apply learnings to completely new situations? When a teacher reports that a laboratory exercise is not effective, it is important to know whether he has a laboratory in which the exercise could work; that is, are electricity, running water and gas outlets available?

Teacher feedback reports also provided a link of communication with teachers. And it is very important to read all of these promptly. The writers do not have a monopoly on good ideas and it is not only possible, but also probable that teachers will come up with useful ideas the writers never thought of. Furthermore, the feedback gives an idea of teacher pacing of the course, whether the teacher is actually using all the materials and using them in the requested sequence. For example, one year, through teacher reports, the BSCS learned that a few teachers spent the entire first semester teaching one month's work, despite suggested schedules to the contrary; without some type of log such as could be obtained from the feedback report, semester test scores for students in such classes would be subject to serious misinterpretation. Often trouble spots can be cleared up before the teacher has further difficulty. Also, the teachers will know whether you read the feedback, since, despite instructions to the contrary, teachers ask questions in the feedback and if they do not get answers, they know you are ignoring the feedback.

The teacher reactions should not be underestimated. Unless the teachers find the material usable, the project cannot be successful in the long run. It may be a matter of lack of teacher preparation or insight rather than the fault of the new curriculum. Nevertheless, the situation must be corrected if the curriculum project is to find long-term success in actually improving curriculum in the schools.

BSCS staff and writers visit all BSCS test classrooms at some time during the year. This gives a kind of information difficult to obtain on written reports; it gives a perspective in which to place the teacher report, and also may provide information concerning the way in which BSCS is presented. It may be that the teacher is really teaching the old curriculum, using the new experimental book to do this. It may be that other factors supposedly built into the experimental situations are not, in fact, present in the situation, despite earlier written assurances that they would be. Visits to the classroom are really the only way the evaluator can be sure the situation required by the experimental design actually exists. This does not mean that the evaluator himself must visit classrooms. But someone fully cognizant of the implications of the experimental curriculum and the evaluation should.

Who Should Do the Evaluation?

Evaluation in a curriculum study could be something quite apart from the study; that is, it could be carried out by an independent evaluator. Or evaluation can be built into the study as one of the functions of the study. The problem of who should do the evaluation is related to the function of the evaluation. During the time the materials are in formative stages, the evaluation serves to tell the writers how successful their materials are and where changes are indicated. Later, evaluation serves to describe the new materials to others, and to compare them to other materials.

Having an independent evaluation would have the theoretical merit of lack of bias. However, during the years in which the curriculum is being prepared and the writers are dependent on it for direct feedback, the disadvantages would seem to outweigh the advantages. For the evaluation to be an effective part of the curriculum-building process, it is important that there be feedback to the writers in terms of the writers' objectives rather than of external criteria. Thus, there must be assurance that the instruments used in the evaluation reflect the objectives of the writers. This does not mean that there is no purpose served in using existing tests, whether or not these reflect the objectives. To give an existing test, say of writing skill, which reflects the objectives of the writers would have merit. To give a test in traditional biology materials, which does not reflect the intentions of the BSCS writers, would not give a reflection of the adequacy of the curriculum. But it could be useful in describing the differences in learnings of control and experimental students.

In its initial years, the BSCS had an external evaluation through a testing agency, and found that it was not possible for a third party to adequately appreciate and reflect the aims and objectives of the writers, while these are still in developmental stages. Thus, in the summer of 1961, a BSCS Evaluation Committee was set up of the persons in supervisory positions responsible for preparing the new materials. This Committee supervises the evaluation, and its subcommittee builds the evaluation instruments. This process accomplishes two things. First, it insures that the writers are satisfied with the criterion measures being used. In other words, the writers are put in a position where they either say, "Yes, this is the kind of learning skill or understanding we are concerned with. We will be satisfied if the students are able to answer this question." Or they must suggest alternatives. And, second, the process of constructing evaluation instruments helps the writers define their own objectives more precisely. While it is well and good to say that before starting to write curriculum materials the authors should have a list of aims and objectives, in actual practice this is extremely difficult and often leads to long and unprofitable semantic arguments or to generalized lists not useful for working purposes. On the other hand, the review of test items and preparation of new items is a good way of clearly pinpointing the objectives. Furthermore, from time to time, in writing test items the BSCS writers found that there were questions they wanted to ask but could not, because the curriculum materials did not cover them. Thus, the process of writing tests not only clarified aims but occasionally pinpointed short-comings in the materials.

This does not mean that outside agencies cannot help. The BSCS has consistently called on psychometricians to advise and assist in its evaluation, and will continue to use them. But it does mean that the BSCS found need for closer integration of evaluation with curriculum building than was practical with an outside independent agency doing the evaluating. Evaluation then became an intradependent rather than an independent function.

One may ask, "Is an evaluation really an honest evaluation unless it is done by an independent source?" To assume that it is not, would be to question the validity and honesty of the majority of education research studies and the integrity of scientists in scientific endeavors.

When the new curriculum materials are in their final form would seem to be a useful time for an external evaluator to step in for some phases of evaluation. Certainly there should be an impartial look by outsiders at the new product, with the outside evaluator constructing instruments which reflect his own objectives. But these objectives should be very carefully defined. They may or may not be the same as the objectives of the curriculum study. They may stress aspects that were not stressed in the curriculum study, or they may attempt to measure aspects the curriculum study failed to measure. But the frame of reference and the value system for such an evaluation must be fully described. There have been all too many outside evaluators reporting that an experimental curriculum is or is not good because students do well or do not do well on a test that predates the curriculum and is unrelated to the objectives of the curriculum. If the curriculum really needs drastic change in biology, certainly the old test suitable for measuring learnings prior to the curriculum study cannot conceivably measure the new objectives. At the same time, it should be recognized that use of such older tests reflecting very different objectives may adversely affect the classroom teaching of the new curricula, since it may give teachers and students expectations which are traditional rather than new.

Thus, while the materials are in their formative stages, a curriculum study must have evaluation activities in order to feed back to the study information on whether the materials are teachable, what is effective and what is not effective and whether the curriculum is achieving its goals. This is information that is vital and can only be gotten by the study itself, since it is study personnel who know what is needed. After the materials are generally released, it would seem to me that two types of evaluation are indicated. First, the continuing need of the study to find out how and when the materials work, what are the weaknesses and what is reasonable expectation. And second, an external evaluation as a type of audit of the study evaluation and also to look at aspects not important to the curriculum builders, or not measured by them. Further, there is a need for an external comparison among new curricula where several exist. But the external evaluation is outside the jurisdiction of the curriculum study. Certainly others should take a critical look at one or more curricula in terms of sequence, combined effect, actual outcomes. Who does this and how are not the prerogatives of the curriculum project.

The Objectives of the New Curriculum

In planning an evaluation program, it is important to know what the new course is trying to do. One might ask the writers for a list of objectives. But it is difficult for people to verbalize about concrete objectives. It may not be until the course is actually written and the writers begin to write test items that they are able to focus more clearly on the verbalization of the objectives. And to compile a list of objectives simply to have a list is not going to help in getting on with the job.

If the evaluator is able to get such a list of objectives from the writers, it is a useful tool. But failure to get a list does not mean that the evaluation cannot progress. The objectives may be an emergent thing. And even if you start with a list, it will require modification. The BSCS now has a set of clearly defined objectives. These were not on hand before the writing conferences; rather, they emerged from speeches, from prepared statements circulated among the writers and the BSCS staff, from the introductory material in the books and from teacher materials. It was a matter of clarifying and pinpointing as time went on. The writers could look at test items and say, "This is what I mean." Or "This is not what I mean," even when they could not list aims in advance.

One of the problems of lists of objectives prepared in advance of the work is that they may not represent the real objectives. For example, today the battle cry among educators is "creativity." Everyone wants students to be creative. Or at least everyone says he wants students to be creative. But do we really want them to be creative? And if they are creative, do we reward or punish them? Creativity can be a nuisance. It delays classes. We do not get through the planned lesson. Do we really want students to ask, "Why?" "How do you know?" and "How can you prove it?" Do we want them to go off on ideas of their own? This is creativity, and it makes for a lot of trouble in the classroom.

It is easy to write the word "creativity" down on a list of aims, but unless the curriculum builders and the teachers really want creativity and are willing to put up with it when they get it, a measure of creativity as an outcome will not be relevant. Even if the writers really want to develop inquiring minds, do the tests they write reflect this? And do the experimental teachers also have this aim? For example, in a BSCS class when one youngster questioned the keyed answer on a teacher-made quiz, he was told, "Your answer is wrong because that isn't what the book says." The BSCS curriculum is intended to stress creativity, encouraging the student to bring his experience to bear on new situations; but this unfortunate teacher stressed an opposite process. Thus, when the evaluator comes in later to look for the development of creative thinking, the students will probably implement the type of behavior they have been rewarded for previously; that is, conformity. When the evaluator does not find the desired results, where does the fault lie? He needs enough information about the teaching process in this experimental school to be able to interpret his data adequately.

Selection of Test Sample and Sample Attrition

In selection of test sample, the aims of the materials must be considered. The BSCS attempted to prepare materials for the average tenth-grade student in the average school. Ideally one might say that to test materials, we need an accurate cross-section of America's schools, teachers and students. But there are many reasons why this is impractical and even undesirable. While various types of school situations were included in its experimental samples, the BSCS made no attempt to use a representative sample of schools and students in America.

While theoretically it might be well to try to accurately reflect the geographic distribution of school population in the United States, this was considered impractical. During several test years, the BSCS asked all test teachers to meet weekly to prepare feedback for the BSCS. We found that group feedback often varied from individual feedback or elaborated on different points. Thus it was a valuable adjunct to the evaluation. These weekly sessions were also valuable as an in-service training device, since teachers could help each other on difficulties, they furnished needed support for the individuals in the experimental situations and also teachers could share responsibility for obtaining and preparing lab materials. For example, one teacher might take responsibility for collecting pond cultures, another for ordering a chemical available only in bulk and sharing it with other teachers, etc. To utilize Test Center organizations meant that teachers had to be located in geographic clusters and so the sparsely populated areas of the country were under-represented. This did not seem to be a serious drawback, since there were enough of each kind of teaching situation to enable examination of use of materials in this environment. For example, there were a number of rural, urban and suburban schools; schools in most regions of the country; public and private sectarian and nonsectarian schools; laboratory schools, large and small schools; schools with excellent laboratory facilities and those where labs were almost nonexistent; schools with large classes and those with small classes; and teachers with excellent preparation and those with little biology background.

Also, if one is to use volunteers, it should be recognized that it is generally the more able, more alert teacher who will volunteer. This, too, prevents getting an accurate cross section of the teaching population. On the other hand, the BSCS was not preparing a biology course to be used by a home economics teacher or a football coach. While the BSCS recognizes that all biology teachers do not have optimal preparation, we were concerned with whether the materials can be taught by most biology teachers. The BSCS was not concerned with the question of whether its materials can be taught by non-biology teachers. In a curriculum project, a decision must be made as to whether the goal will be materials for the lowest common denominator of teaching situations or whether a reasonable requisite in teacher competence and school situation should be set and the course materials based on this assumption. The latter was the choice made by the BSCS.

For testing purposes, the BSCS considered it necessary to have the same teacher throughout the year for two reasons. First, change of teacher introduces an additional variable. And, second, since the curriculum was new, and it was felt that without proper orientation it probably could not be presented to students in the intended fashion; test teachers were given a six-day pre-school orientation. If there were a change of experimental teachers during the year, the new teacher would not have had this orientation. (Some may say this orientation biases the results. However, it should be kept in mind that most teachers have been specifically oriented over many years for the conventional courses they have been teaching. Thus, why is it unfair to give an even briefer orientation to the new course? Further, not only is very new subject matter included in the experimental course -- subject matter not generally included in the collegiate preparation of these teachers -- but also the method of implementation to the course materials is considered by the BSCS to be at least as important as the written student materials. Unless teachers understand this, how can they teach the course successfully?)

The BSCS materials constitute a one-year course, and the BSCS was interested in the impact on students of the full course. Thus, only students in the course all year were considered in the statistical studies of achievement. (To identify students in the course all year, the BSCS uses the rosters of a beginning-of-the-year general ability test and an end-of-the-year achievement test.) The BSCS was not investigating the impact of the course on students who transferred in late or who transferred from BSCS Biology to traditional courses. While these are valid questions for some researcher, the task the BSCS set for itself was to build a one-year curriculum. And so evaluation was based on a full-year curriculum. Thus, we needed schools that had a relatively stable student body. To choose a school with more than fifty per cent student turnover in the year would not only deplete the study population but create learning situations far different from that for which the materials were designed, since the BSCS course consists of units which are cumulative rather than independent of each other. To include schools in a one-industry area, where cancellations of a single defense contract might result in wholesale exodus of workers and their families would also be shortshighted.

While certainly "large samples" of teachers and students are not necessary, what is an adequate sample? The answer, of course, depends on the questions to be answered. But also in setting up the research design for several BSCS classroom studies, we have found that despite care in initial selection, the sample attrition may be as high as a quarter of the teachers, not through any error in selecting sample or lack of desire of teachers and principals to cooperate, but through other factors. Some years the attrition has been far less, but we cannot depend on this and we have been unable to accurately estimate in advance what the attrition will be. Teachers transfer; they move during the year; they get sick; they have babies. One BSCS test year, many units of the U. S. Army Reserve were called up, and we lost teachers. Each winter there are a number of broken limbs; and husbands of biology teachers are transferred and the wife must go along.

If one is testing outside the geographical area with which one is intimately familiar, it is extremely difficult to determine the extent to which a school meets the research design criteria. For example, one may get commitments in advance that at least eighty per cent of the students will be at a particular grade level; or that teachers have had or will have a specific kind of preparation; or that only one teacher is involved; or that the teacher will have a minimum of three sections in that course at that grade level. But the actual teaching situation after school starts may not reflect this. In planning to test the BSCS Special Materials for lower ability students, principals and teachers signed an agreement that students assigned to the class for low-ability students would be tested in the spring and that no student above the fiftieth percentile on an ability test would be assigned to that class without specific justification. Many schools honored this commitment fully; others did not. There was no way of telling which schools failed to honor their committments until after the start of school when the BSCS itself administered an ability test, and then it was too late to change the test sample. A hypothesis being tested was that the BSCS Special Materials were suitable for use in classes relatively homogeneous for general ability. One could test the effect in heterogeneous classes, but this was not the purpose of the BSCS study. The failure of schools to comply with prior commitments was not a matter of carelessness on the part of the BSCS, or lack of specificity in instructions to the schools. This simply happens in a free school system where the evaluator does not run the school; he must accept things as they are. In later studies, the BSCS can refuse to accept those schools which did not live up to past commitments; but nothing can be done to remedy the loss for the test year. And unless the sample is large enough to stand such attrition, the entire evaluation for the year can be jeopardized.

The problem of evaluating a full year curriculum is complicated by the practice in many high schools of scrambling classes at mid-year. This has happened even in schools where the BSCS had only one section of a new curriculum, radically different from what was taught in all other sections of the biology course at this grade level. In some schools, only five or six students of the original thirty-five were assigned to the same section (and curriculum) the second semester. While this problem would not occur in the elementary grades, it can be a serious one in the large junior and senior high schools. Why did the BSCS not ask the schools for continuity in class assignments? First, one must anticipate the situation, which we did not the first time it occurred. We expected, and I think not unreasonably, that if there is a one-year experimental sequence that is described as radically different from anything taught at that grade level before, the class would be kept relatively intact for the year. But in later years, with schools warned about this, the results will not necessarily be different. Schools are complicated administrative organizations and school personnel changes and commitments may be forgotten.

The BSCS had to select the experimental teachers in the spring in order to give them pre-school training and also to have the beginning-of-the-year test in the schools by the first of September. But there is considerable last minute teacher turnover from April to September. Teachers are transferred; there may be programming difficulties requiring shifts of teachers; the last minute a teacher in a related subject may drop out and the experimental teacher may be assigned to that other subject. And so new, untrained teachers appear. Thus, violating the research design.

The BSCS even encountered problems related to Spanish-speaking Cuban students. One year, we learned rather indirectly that there were Cuban students with no English scheduled into BSCS experimental classes; this meant that, without our knowledge, we might have been testing BSCS Biology with students who did not have mastery of the English language. Granted this may be a worthwhile research study, but it is not a suitable study during the feasibility period of the BSCS and it was not the intent of the BSCS to study this. And the school system which had assured us of its eagerness to cooperate, which had made promises in order to be accepted in the program, had not even advised us of this situation.

In a study which uses schools within a limited distance from its headquarters, there may be considerable familiarity with the schools and school systems, and it might be easier to anticipate these kinds of problems and avoid them. However, using a larger geographic area for experimental teachers, the sample should certainly be large enough to take some of this type of attrition into account.

It is certainly helpful for a new curriculum if the experimental teachers have interns during the year, since this is a way of introducing new teachers to the new curriculum and preparing them to teach it. However, particularly when an intern arrives in the middle of the school year, this can create an extremely difficult situation. Some interns have never seen nor heard of the BSCS materials before they arrive at the high school; they do not have time to read the first semester's materials which the students have already covered, and so they are thrust into a teaching situation which is completely strange. Certainly experimental teachers should be encouraged to have interns, but there should be a close liaison with the college sending interns, so that before leaving the college they are familiar with the materials and rationale, and read at least as much of the materials as the students have already covered. This may seem to be an elementary observation; however, there are high schools that have used BSCS Biology for four years where interns from the local colleges continue to come to the internship post without ever having seen the BSCS books and having had little or nothing in their collegiate preparation to prepare them for teaching BSCS Biology.

Selection of a Control Group

The BSCS is funded primarily through the National Science Foundation. As a recipient of public funds, it has the responsibility to make full information concerning its activities widely available. Further, through such public information programs it is possible to enlist the aid of more persons in preparing the new curricular materials. And, by keeping persons interested in biological education informed, when the materials finally were ready for general release, they found a more sympathetic audience than would have been the case had there not been the advance information. However, the more successful the curriculum venture in this regard, the more problems of contamination of the control group.

For example, in the BSCS 1960-61 and 1961-62 evaluation, visitors to schools in which there was only one BSCS teacher reported seeing materials related to BSCS experiments in non-BSCS classrooms. The other biology teachers had seen an interesting experiment in the one BSCS class, mimeographed it and used it in conventional classrooms. Because of this experience, in 1962-63, it was decided to draw control classes only from those schools where no classroom sets of BSCS Biology had been sold, and often from cities where no classroom sets of books had been sold. Despite such a careful check, when questioned on an end-of-school year questionnaire, over one-quarter of the control group teachers reported that they were using "some BSCS materials" in the classroom, and so it was necessary to drop them because of contamination.

Granted an uncontaminated control group, the problems do not disappear. What instruments can be used to measure achievement of control and experimental students? In biology, the goals of the new materials are so radically different from those of the existing curricula that existing tests are not pertinent, and the measure suitable for the new curricula are not relevant for the conventional classes. Thus, the findings using such instruments are a foregone conclusion. Each group will do best on the test related to its curriculum. The BSCS administered a conventional and BSCS test to control and experimental groups, and naturally the control group did better on the conventional test and the experimental group did better on the experimental test. (Possibly the experimental group did too well on the conventional test. Perhaps students could not have done this well unless the BSCS experimental teachers had taught considerable BSCS materials, since as many as one-third of the items in the conventional test -- and these were factual items -- could not have been answered on the basis of information included in the BSCS materials.) To administer a test only on those materials or subjects which conventional and experimental courses have in common again distorts the perspective of the course and of student achievement.

There may be new courses -- such as the BSCS tenth-grade biology course for the lower ability students -- which do not replace or parallel any existing course. These are simply new materials taught to students who heretofore would not have taken a regular biology course. No tests exist, and no parallel courses exist to provide a basis of comparison. Here, no attempt is being made by the BSCS to set up a regular control group. Students are being tested before, during and after the course, and their progress will be described. Data are available on some of the instruments on classes of average students to give a view of what average performance is. But no meaningful comparison of learnings with a control group is possible. This type of situation is discussed by Lee J. Cronbach (1963).

Even where a control group is feasible, the problems of matching on significant variables raises problems sufficiently great as to make comparisons precarious. Since BSCS includes more than materials in a set of books but also a method of teaching, it is unlikely that one teacher can teach an experimental and control group without contamination. Further, the chore of preparing two different courses instead of one and of setting up different laboratories for each class precludes using the same teacher in both control and experimental groups. And we find contamination in the same school. If we avoid the same teacher and the same school for matching teacher, what should we match for? Until the materials have been tested in the schools, no one knows what the significant variables are. Where materials are being developed and evaluated simultaneously, there is not time for extensive testing to determine variables before making a comparison. And if we wait until we have all the information on this, the degree of possible contamination has increased. For example, in BSCS, we have identified six variables which account for seventy-five per cent of the variance in BSCS student achievement on BSCS tests (Grobman).* We have not yet been able to account for the remainder of the variance. Possibly we will be able to identify other factors as time goes on. But in the meantime, possibly one-fifth to one-fourth of the biology teachers in the United States have attended some type of preparation to teach BSCS Biology. Thousands of speeches have been given about the BSCS and articles on the BSCS have appeared not only in science teaching journals, but in biology journals and virtually every education journal of large circulation. The BSCS NEWSLETTER has had a peak circulation of 35,000. (There is an estimated total of 35,000 biology teachers in the United States.) How could an uncontaminated control be found now or in future years? And to compare BSCS teachers with teachers using some BSCS techniques or materials is not a real comparison of BSCS with what happened before BSCS. And how would one distinguish between those BSCS teachers not fully implementing the course and those non-BSCS teachers using "some" BSCS materials.

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* Hulda Grobman, Student Performance in New High School Biology Program. SCIENCE, 143, 3603, 265-266.

Possibly the more functional method of selecting a control would be to select teachers a year in advance of the testing of the new materials, and to thoroughly test students of these teachers for one year while conventional materials are being taught. And then to use these same teachers the following year with the experimental materials. Granted classes change in composition from year to year, certainly this change is less than the differences that exist between schools, and it would eliminate the teacher variable. The possibility of contamination would not exist. And the Hawthorne Effect, if any, would be the same for both years.

The Hawthorne Effect

The question has been raised on a number of occasions as to whether the outcomes indicated by evaluation in the curriculum studies have simply been the result of the Hawthorne Effect rather than of a better curriculum; that is, the result of an extra effort by teachers simply because they participated in an experiment. I have several reactions here which may be pertinent. First, in school systems today there is so much experimentation going on, that there may be a negative Hawthorne Effect to an experimental project. One principal, whose school was using BSCS Biology, reported that he was glad he had BSCS this year because his parents expected him to have an experiment going every year and he was running low on ideas; quite understandably, the teachers in this school might look with a somewhat jaundiced eye on the idea of experimentation. Furthermore, not all the teachers who "volunteered" for BSCS were actually volunteers. In one county, the word came down from the central office that every biology teacher in the county was to volunteer for the BSCS work, and everyone did; again, one might expect something less than a positive attitude toward the new curriculum materials among these "volunteers."

On the other hand, certainly the BSCS teachers as a group were extremely enthusiastic about the BSCS, and virtually all teachers asked to participate for a second or third year during the experimental period. This apparently amounted to a personal commitment to the materials which they were helping to develop. It was clear that teachers -- most of them for the first time -- felt their ideas were being sought after honestly and respected. This BSCS procedure of involving many people in curriculum building has been recommended for many years in modern curriculum books. But most of the biology teachers who worked with the BSCS had never developed their own classroom materials, or had a hand in developing them. These teachers had generally used standard texts and, granted they supplemented these from other sources, their courses were pretty much regimented by the standard presentation common to the biology textbooks that had been generally available. Is the positive attitude resulting from this honest participation in the BSCS program and seeing his own recommendations implemented in a new curriculum a Hawthorne Effect on the teacher or is it something else?

What Kind of Outcome Should One Expect from an Evaluation?

First, it is important to recognize that the tests built by the evaluators and writers may not seem applicable or appropriate to the teachers. Teachers are used to a very direct test of recall and direct application, where answers to questions are to be found unmistakenly in the book. Questions which go into the higher cognitive levels may appear to the teachers to be unfair or not relevant. The BSCS had many complaints about the tests from new teachers the first and second year. When the same or similar test questions were asked in later years, these teachers felt that the tests had improved; probably the teachers were simply getting more used to this type of testing. This negative reaction to BSCS tests was not limited to high school teachers. One college reviewer of BSCS tests commented that the tests were not fair since "the answers to the items cannot be found in the book."

How large must a difference on testing be to be educationally significant? Many of the writers of the BSCS materials were convinced that the BSCS materials were outstanding and were having a tremendous impact. They could only conclude that the testing procedures were simply not adequate because the differences between control and experimental groups were a matter of some four points or one standard deviation on a forty-item test. These writers felt that the BSCS courses were so revolutionary that the difference should be of far greater magnitude. These critics may have lost sight of several things. First, a forty-item test is a relatively short test and only samples the total biology knowledge and skills of the student. In scientific experiments, they accept statistically significant differences as meaningful, but they do not use the same standard in considering biology education but have no other finite standard to substitute. And they overlook the fact that there are many forces besides the BSCS course impinging on the student, and the longer he remains in the school system, the more impact these other forces will have had on him.

A student who reaches biology at the age of 15 has been going to schools for nine or ten previous years. He has had fifteen years of other environmental experiences, many of which are in direct conflict with those in biology. Concurrently with the biology course, he will be having experiences which conflict with what he is learning in biology. Then, he will be faced with college entrance exams and with standardized tests administered by the school system which may represent the dead hand of the past. For example, in one school system using BSCS Biology, a conventional standardized test was used at the end of the year because school officials insisted on having a standardized test and there was none available from the BSCS since the course was experimental and therefore there were no norms of the BSCS exams. This was done despite the fact that what the traditional test measured was not related to what the BSCS was trying to teach. In another class, the teacher was concerned with teaching her class inquiry and skepticism. She thought students should not accept data without substantiating evidence. She found that some of her best students were having difficulty with the English teacher who expected all of her statements to be taken at face value, without argument. Thus, the student learns to question in biology but not outside of biology.

Furthermore, one should recognize that people do not change quickly. Change is a slow process and even though some change may be building up, there may be a time lag before the overt manifestations of these changes are observable. It may take considerable input of the idea of inquiry and questioning before the student is able to manifest behavior reflecting this. This does not mean that the student is not changing, or that the materials are not effective. Rather there is a time lag during which there is an accumulation of new expectations, before changes are manifested in behavior. For example, during the early years of the BSCS, we found that test questions which involved the higher cognitive levels were more often answered correctly towards the end of the year than at the beginning of the year. This was not a matter of the student having more information related to the test questions, but possibly reflected his being able to handle that type of test question more adequately after he had further experience with this type of mental process.

If the evaluator is concerned with follow-up testing to see the long range impact of BSCS Biology, his findings will be drastically affected by the influence of a multitude of stimuli. Possibly the best follow-up study of an experimental course would include students who had had a nucleus of courses with similar objectives, in a school where these objectives were consistently rewarded. For example, if the BSCS student had a course in SMSG Math, CHEM Study, PSSC and other experimental materials concerned with developing a sense of inquiry in English and social studies, the type of outcome reflected in follow-up studies might be quite different than when the student has had only one course concerned with developing a questioning attitude out of a four-year high school program of traditional and dogmatic nature. Until the broader type of study is done, evaluation of the new curricula will be incomplete, since no one subject area or single year course can be adequately evaluated in isolation from the rest of the school curriculum.

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3

THE MEASURE OF BEHAVIORAL CHANGES AS THE MEASURE OF A CURRICULUM EVALUATION

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What is meant by curriculum evaluation? A useful interpretation is to say that the minimum assessment of a curriculum must provide a behavioral description of what the learner is able to do (observable performance) or able to say (verbal performance) after exposure to the instructional materials that he was unable to do or say before exposure to them. The evaluation of an experimental curriculum must be based, at least in part, upon the identification of the presence or absence of those behaviors which the curriculum designers select as being representative of the particular curriculum. In the case of the AAAS experimental elementary science process curriculum the adoption of this evaluation strategy means that the curriculum writers must specify, in terms of observable behavior, the meaning of each of these processes.

The Specification of Behaviors

The first phase of the evaluation of the AAAS Elementary Science Process curriculum began with the first day of writing of the experimental materials. Each of the writers participating in the 1963 and 1964 summer conferences was given the charge of specifying precisely what he would expect to see the child do or hear the child say in order to be satisfied that the child had learned what he intended. This collection of behaviors is identified for each of the exercises and these same behaviors are defined to be the objectives for each of the exercises.

The summer writers are provided with the following criteria for writing statements of objectives:

The statement of objectives should include all of the individual performances one expects the child to have learned during the exercise. When conceived as immediately observable performances, these may be thought of as minimal objectives; but as such, none should be omitted from the statement.

Many authors prefer to state, in addition, some longer-range objectives such as "increasing understanding," "developing appreciation," and so on. An objectives statement must be considered incomplete if it includes only this kind of statement. The question to be faced is, what specific things is the child expected to learn which can be seen when immediate observations of his performance are made? If these are present, then the inclusion of additional, long-range objectives is satisfactory.

A major criterion should be clarity, the avoidance of ambiguity. For example, a statement like this is ambiguous: "The child should be able to recognize that some objects can be folded to produce matching parts, i.e. are symmetrical." This statement might mean several different things:

a. The child recognizes symmetrical figures when they are folded to produce matching parts;

b. The child can verbally answer the question about what makes a figure symmetrical by saying, "A figure is symmetrical if it can be folded to produce matching parts;"

c. The child can demonstrate whether or not a figure is symmetrical by pointing out its matching (or non-matching) parts.

These are not the same things. While a child is unlikely to be able to do (c) without being able to do (a), he could certainly do (a) without (c), (c) without (b), and (b) without either (a) or (c).

It would be desirable, therefore, to use words for performance which are as unambiguous as possible. Some examples are:

1. *Identify*, also *recognize*, *distinguish*. This means point to, choose, pick out, or otherwise respond to several stimuli differentially.

2. *Name*, also *state*. These imply that a verbal statement is required.

3. *Describe* implies verbal statement, and also that the categories described are self-generated. ("What color is this ball?") is "naming;" ("How do you describe this ball?") is "describing."

4. *Order*, or *place in sequence*.

5. *Construct*, *print*, *draw*.

6. *Demonstrate* means that the child is applying a principle to a specific situation. For example, he may be asked to demonstrate symmetry of a figure by folding and matching halves.

Why the emphasis on performance and verbs implying performance? The major reason is to stay away from "mere" verbalization. If one says the child "understands that such-and-such is true," this might be taken to imply merely that the child can repeat a verbal statement. Much better to have him identify something, or construct something, or demonstrate something. Under these circumstances, we know he "knows."

Certainly one might question the necessity or purpose of such rigid specification of the expected instructional outcomes. The principal justification rests upon the advantage it holds for two groups directly participating in any curriculum experiment: the teacher and the evaluator.

It should be quite apparent that the specification of objects in behavioral terms provides an immediate and direct vehicle by which to communicate the expected goal of any instructional activity. This is a device by which the individual whose chief responsibility is the shaping of behaviors, the teacher, is informed of the desired outcome of instructional materials. If any hope of success for a given set of activities is to be sustained, then the individuals attempting to use the materials must know the character of what is to be learned. That is, the teacher must be provided with the means by which to recognize whether the terminal goals have been accomplished. Behavioral objectives provide such knowledge.

If a curriculum project claims to have accomplished something, then one of the most fundamental obligations of the experimenter is to present evidence of change or proof of learning. These are basic to a demonstration of accomplishment. But how can such proof be forthcoming unless there is initial agreement upon what the learner will "be able to do" after he has been exposed to the curriculum materials.

Therefore, the most significant benefit of curriculum objectives presented as statements of reliably observable behaviors is that it instructs one in precisely what to observe the child doing or saying provided that the materials have been effective. In this way it is possible to evaluate the success or failure of each activity by means of a direct measurement. A logical and necessary refinement of this strategy is to require that each objective contain an indication of what the author of the material considers a minimally acceptable performance. That is, one must account for "how well" or "how much" in addition to "what the child should be able to do or say."

Construction of Immediate Behavioral Measures

The second phase of the evaluation strategy is concerned with the actual measure of whether the behaviors specified in each exercise are acquired by the students using these materials. The following individual testing procedure was adopted as a means by which to obtain this measurement. A measure of the behaviors or expected competencies specified in the objectives for each exercise was developed. These measures were defined to be "Checklists of Competencies" and were constructed in such a manner that each one consisted of two sections. The first section is a description of the stimulus situation to be constructed by the tester together with a series of instructions describing the tasks the child is asked to perform and the range of acceptable responses. The second section of each Checklist is a tabular array on which the teacher reports obtained from three students. In all cases the learner's performance is reported on a binary scale: yes or no.

The summer writers are provided with the following criteria for designing checklists:

1. Each objective of the exercise should be represented by at least one question. Hopefully, these questions should be suggested by the statements of objectives. But in any case, whatever has been taught should be measured.

2. For convenience in administration, each question (or statement implying a question) should be numbered.

3. The questions need to be designed to elicit performances of the sort described above under objectives. If a construction is called for, the question might begin, "Draw a..." If the child is being asked to name something, the question might be, "What do we call this?"

4. The description accompanying each question should tell the teacher clearly what to do (not just imply it). For example, an accompanying instruction might be: "Place in front of the child a dittoed sheet containing an equilateral triangle and a circle." Or, "Give the child a meter stick." Or, "Locate on a globe the city of New York and the city of San Francisco, and point them out to the child."

5. The kind of performances that are correct and incorrect should be clearly stated, if not implied, so that the teacher will know whether to check or not to check.

The checklists are administered to three children in each class. The three children used in the testing situation are randomly selected for the experimental Centers by the AAAS staff. In order to provide for a maximum range of student involvement, a new triple of students is randomly chosen for each month of the academic year.

A more general appraisal is also administered at the completion of each exercise. This exercise appraisal is administered to a group of children or the entire class. The following criteria for designing the appraisal were adopted:

The appraisal statement at the end of the exercise needs to meet several important criteria.

1. It should correspond to the objectives in the sense of including them all, unless this is prohibited by practical considerations of the classroom.

2. It should be possible for the teacher to carry out, without taking an inordinate amount of time, extra equipment, or special preparation. Included is the need for carrying this out with a class, as opposed to doing it with individual students. (The latter function is incorporated in the Checklists of Competencies.)

3. The purpose of the appraisal is for the teacher to satisfy herself that the lesson has been completed, and that the pupils have learned what they are supposed to learn. (A certain amount of unreliability to this judgment is recognized under the usual classroom conditions.)

4. It should not imply that the child will be asked to do something new, i.e. undertake some additional activity which has not been specifically taught.

5. However, certain changes need to be made in the questions, the materials, and the content of an appraisal exercise for the specific purpose of avoiding the measurement of specific recall. For example, if the red ball has been found to weigh more than the blue ball during the learning activities, different colors need to be used during the appraisal. We do not want the child to respond simply on the basis of his recollection that the red ball was heavier. On the other hand, there is no particular need to search for strange unfamiliar objects, rather than using balls.

The second phase of the evaluation is, therefore, intended to collect information on an immediate behavioral level that reflects the extent to which any given set of objectives are accomplished for any given exercise. This analysis, however, does not answer the question of whether the child's behavior has been changed with respect to the scientific processes such as observation, measurement, prediction, and so on. Since it is the expressed intent of this experimental curriculum to provide children with a "better understanding of these scientific processes," it is only reasonable that one is under obligation to specify the behavioral meaning of the "understanding process" statement, as well as to investigate the validity of this claim. This investigation becomes the focus of the third phase of the evaluation strategy.

The Process Instrument

The third phase of the evaluation strategy concerns itself with the development of an instrument which will identify an individual child's progress with respect to the "scientific process." The initial step in the development of this process instrument can be resolved into one of obtaining an appropriate sample of behavioral tasks which are representative of each of the processes included within the curriculum. However, this sample is not restricted to the environment identified in the experimental exercise. In fact, one envisions constructing a scale of tasks for each of the scientific processes. These tasks should reflect the degree of sophistication present in the behavioral repertoire of the individual for that particular process. The measure of degree of sophistication might also be considered a measure of horizontal transfer.

Form of the Instrument

In the development of such a process instrument for children at the K, one, two, and three grade level there is a commitment to an individual test instrument. The efficiency of the group testing procedure cannot be denied, but there are certain advantages of an individual test instrument which override the efficiency factor of the group testing format. It must be remembered that by means of this process instrument one must be able to determine whether a given collection of behaviors is present or absent for any particular individual tested. It is not the intent of this instrument to obtain a measurement which will provide a comparison of one individual with another with respect to some experimentally derived "average individual." Nor is it the intent of this instrument to provide a percentile position in a ranked group. In place of such "person to person" descriptions, the process instrument is intended to obtain a measurement which provides a "person to collection of behaviors" description. Since the subjects at the K, one, two, and three grade level cannot read at all or read an inadequate level for test instruction purposes, and further since there exists a high probability that individuals from this population will not accurately follow verbal group instructions, a group testing format will most certainly introduce confounding factors into the measurements. These factors may very well render useless any data obtained from such an instrument. Clearly, then, the construction of a measure which is administered to each individual separately offers a reasonable solution to the question of what form the process instrument should take.

Construction of Instructional Objectives

Instructional objectives described as observable tasks, the outcomes of human behavior, by the curriculum creators serve as the starting point for the process measure. Such descriptions must be designed so as to be understandable and reliable, so that different individuals are able from a reading of them to agree fully on a set of events which would constitute an example of each task. It is helpful to define a set of constraints under which each behavioral description (objective) must be confined. The following is a set of such constraints:

1. Words denoting the stimulus which initiates the performance should appear in the description. ("Give two numerals connected by the sign +" is an example.)

2. An action word or verb which denotes observable behavior must be contained in the description.

3. A word denoting the object acted upon must be contained in the description.

4. A phrase which indicates the characteristics of the performance that determine its correctness must be included in the description ("A name of the numeral which is the sum of two and one.")

There must, of course, be general agreement that "action words" (verbs or phrases) must be observable activities. This commitment is directly related to the criterion of reliability. To "know," to "understand," to "appreciate," are fine words, but they do not yield to the criterion of observable activity. On the other hand, words such as "name," "identify," "recognize," do lead to reliable (directly observable) descriptions. This distinction is merely a recognition that there is a difference between actions which can be reliably identified with agreement by several independent observers and actions which cannot be so identified. Obviously overt acts are in the former category.

The action words which were used as operational guides in the construction of the scientific process learning set hierarchy are as follows:

1. Identifying. The individual selects (by pointing, picking up, or other responses) the correct object of a class, in response to its class name. For example: "show me the frog," when presented with a set of small

animals or animal pictures; "pick up the red traingle," when presented with a set of paper cutouts representing different shapes. This category of performances also includes identifying object properties (such as rough, smooth, straight, curved, etc.); and in addition, kinds of change such as an increase or decrease in size, etc.

1a. Distinguishing. Identifying under conditions in which the objects or events are potentially confusable (square, rectangle) or when two contrasting identifications (such as right, left) are involved.

2. Constructing. Generating a construction or drawing which identifies a designated object or set of conditions. Example: Beginning with a line segment, the question is asked, "complete this figure to represent a triangle."

3. Naming. Supplying the correct name (orally or in written form) for a class of objects or events. Example: "What is this three-dimensional object called?" Answer: a cone.

4. Ordering. Arranging two or more objects or events in proper order in accordance with a stated category. For example: "Arrange these moving objects in order of their speeds."

5. Describing. Generating and naming all of the necessary categories of objects, object properties, or event properties, that are relevant to the description of a designated situation. Example: The question is of the form, "Describe this object," and does not limit the categories which may be generated by mentioning them, as in the question, "Describe the color and shape of this object."

6. Applying a rule. Using a learned principle or rule to derive an answer to a question. The answer may be a correct identification, the supplying of a name, or some other kind of response. The question is stated in such a way that the individual must employ a rational process to arrive at the answer; such a process may be as simple as, "A is present, B is present, therefore C must be true." Example: Question: "Which of the following (diagrams) meets the definition of an angle?" The answer requires that the individual determine that there are two rays which intersect at a point.

7. Stating (a rule). Makes a verbal statement (not necessarily in technical terms) which conveys the meaning of a rule or principle, including the names of the proper classes of objects or events in their correct order.

Example: "What is the test for determining whether this surface is flat?" The answer requires the mention of the application of a straight edge, in various directions, to determine touching all along the edge.

8. Demonstrating. Performing the operations necessary to the application of a rule or principle. Example: "Show how you would tell whether this surface is flat." The answer requires that the individuals use a straight edge to determine touching of the edge to the surface at all points, and in various directions.

9. Interpreting. The child should be able to identify objects and/or events in terms of their consequences. There will be a set of primary mediators always connected with this behavior which are often called rules or principles.

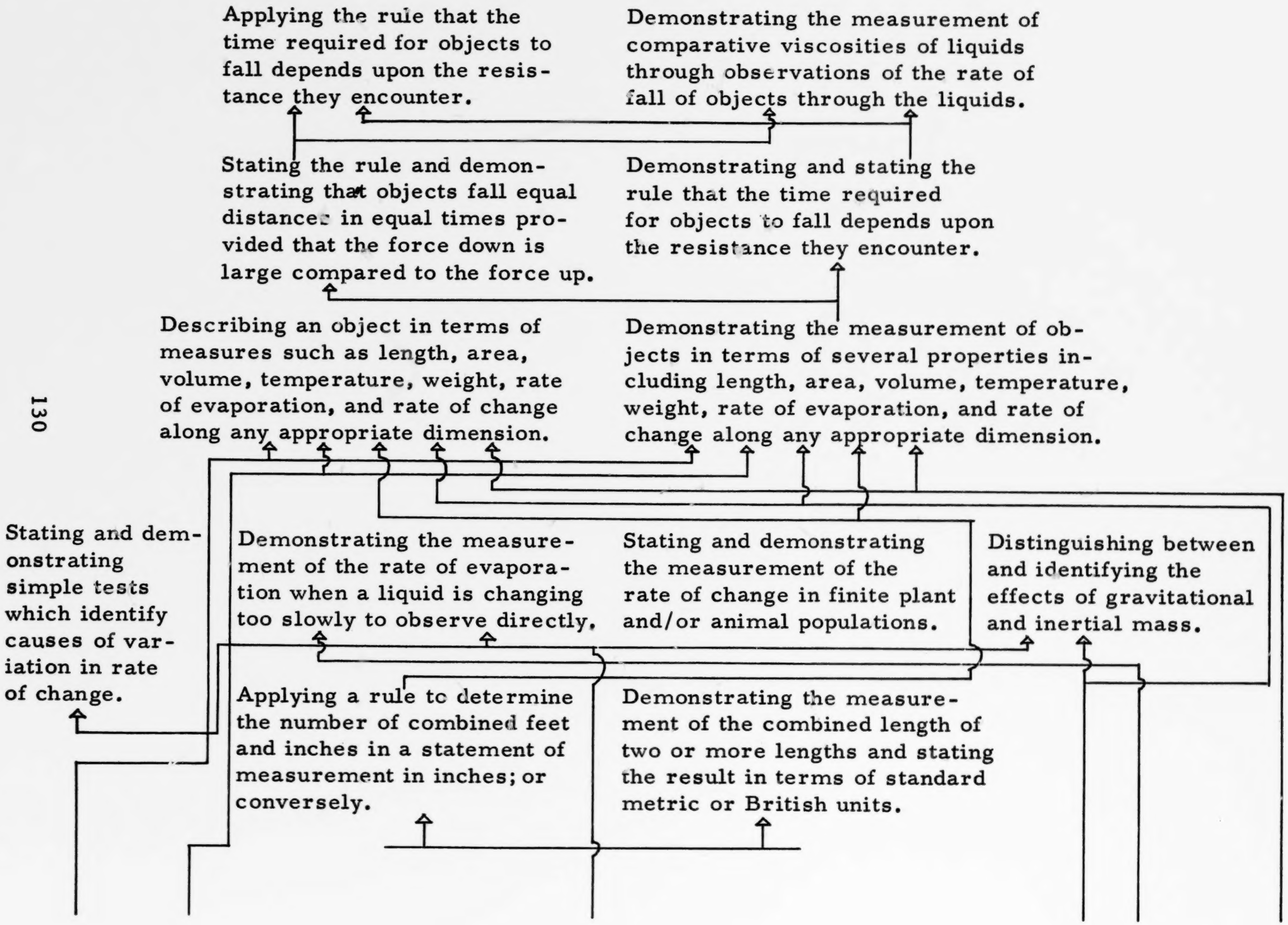
Learning Set Hierarchy

The behaviors identified as the objectives for each of the experimental exercises are then structured into a hierarchy of learning sets which identifies the dependence that exists among them. This procedure is patterned after that developed by Gagné (Gagné et al., 1962; Gagné and Paradise, 1961). Gagné's procedure is one which consists of the analysis of the terminal performace into entire hierarchies of supporting "subordinate knowledges," which are also performance objectives. The studies of Gagné have shown that the attainment of each of these "subordinate" objectives by the learner is an event which makes a highly dependable prediction of the next highest related performance in the hierarchy. If the learner attains the objectives subordinate to a higher objective, his probability of learning the latter has been shown to be very high; if he does not acquire the behavior associated with one or more of the subordinate objectives, his probability of learning the higher one drops to near zero. In this view, the entire experimental curriculum is characterized by the sequence of stated objectives, one building upon another until the terminal performances are reached, forms the outline for a measure or an evaluating instrument. According to the experimental results of Gagné and his associates, failing to achieve a subordinate objective (not acquiring that behavior), means that the learner effectively "drops-out" of the learning at that point, and is unable to acquire the behaviors associated with the higher level learning sets. This implies that the interpretation of the results for a given individual and his test results is to pinpoint a vertical position on the hierarchy of learning sets. But, of course, this is not refined enough when one considers that each learning set level has the possibility for extensive horizontal width with respect to the behavior or behaviors at that level. The horizontal aspect of the behavioral measure does not ask the question, "Did the learner acquire the behavior stated in the learning set?" but rather asks the question, "To what other performances is this acquired behavior useful?" The horizontal aspect of the behavioral measure is, of course, transfer. The learning set hierarchy for measurement is described in Figure 1.

FIGURE 1

The Learning Set Hierarchy for Measurement

MEASUREMENT



Applying the rule that the time required for objects to fall depends upon the resistance they encounter.

Demonstrating the measurement of comparative viscosities of liquids through observations of the rate of fall of objects through the liquids.

Stating the rule and demonstrating that objects fall equal distances in equal times provided that the force down is large compared to the force up.

Demonstrating and stating the rule that the time required for objects to fall depends upon the resistance they encounter.

Describing an object in terms of measures such as length, area, volume, temperature, weight, rate of evaporation, and rate of change along any appropriate dimension.

Demonstrating the measurement of objects in terms of several properties including length, area, volume, temperature, weight, rate of evaporation, and rate of change along any appropriate dimension.

Stating and demonstrating simple tests which identify causes of variation in rate of change.

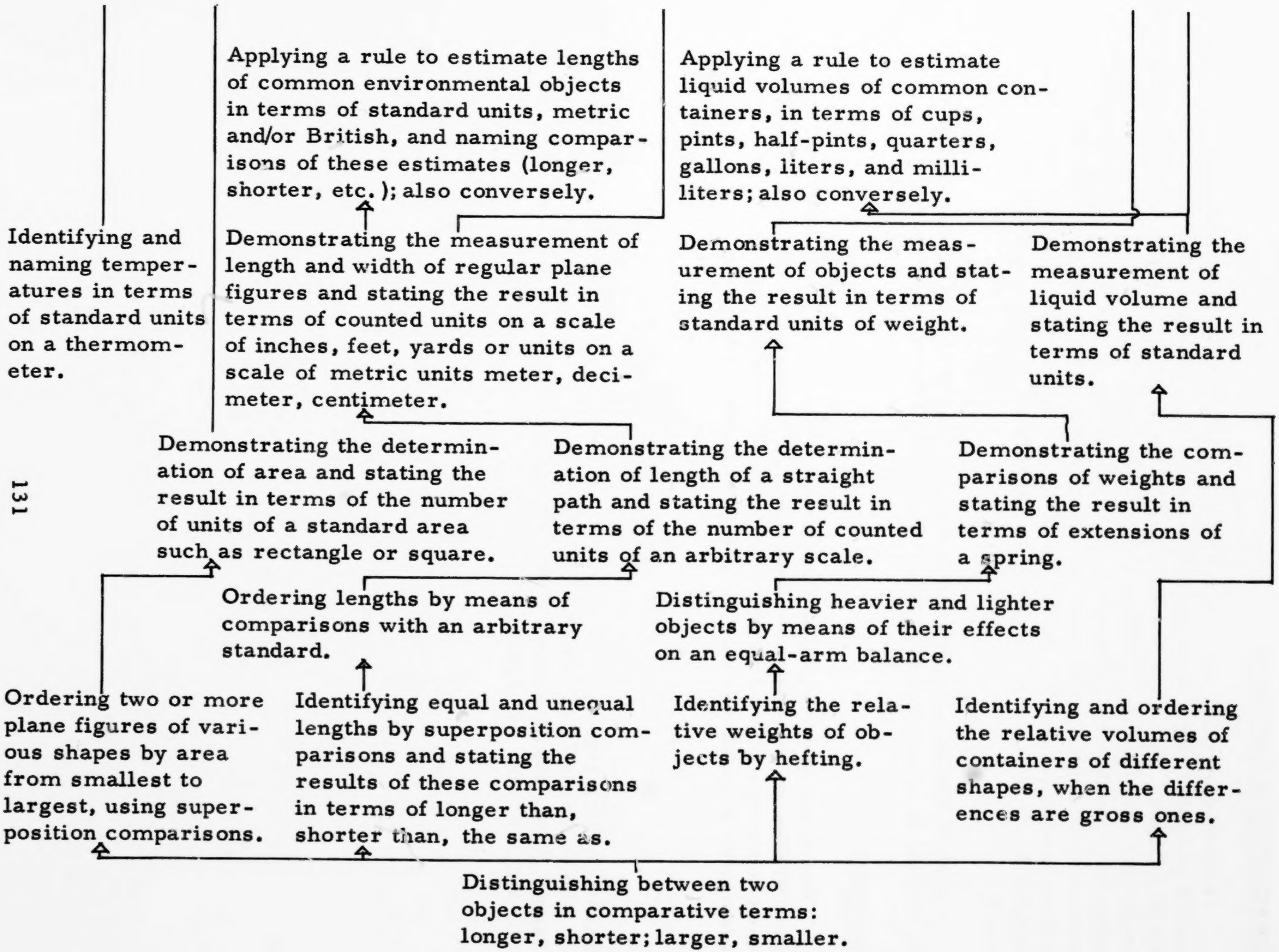
Demonstrating the measurement of the rate of evaporation when a liquid is changing too slowly to observe directly.

Stating and demonstrating the measurement of the rate of change in finite plant and/or animal populations.

Distinguishing between and identifying the effects of gravitational and inertial mass.

Applying a rule to determine the number of combined feet and inches in a statement of measurement in inches; or conversely.

Demonstrating the measurement of the combined length of two or more lengths and stating the result in terms of standard metric or British units.



Identifying and naming temperatures in terms of standard units on a thermometer.

Applying a rule to estimate lengths of common environmental objects in terms of standard units, metric and/or British, and naming comparisons of these estimates (longer, shorter, etc.); also conversely.

Applying a rule to estimate liquid volumes of common containers, in terms of cups, pints, half-pints, quarters, gallons, liters, and milliliters; also conversely.

Demonstrating the measurement of length and width of regular plane figures and stating the result in terms of counted units on a scale of inches, feet, yards or units on a scale of metric units meter, decimeter, centimeter.

Demonstrating the measurement of objects and stating the result in terms of standard units of weight.

Demonstrating the measurement of liquid volume and stating the result in terms of standard units.

Demonstrating the determination of area and stating the result in terms of the number of units of a standard area such as rectangle or square.

Demonstrating the determination of length of a straight path and stating the result in terms of the number of counted units of an arbitrary scale.

Demonstrating the comparisons of weights and stating the result in terms of extensions of a spring.

Ordering lengths by means of comparisons with an arbitrary standard.

Distinguishing heavier and lighter objects by means of their effects on an equal-arm balance.

Ordering two or more plane figures of various shapes by area from smallest to largest, using superposition comparisons.

Identifying equal and unequal lengths by superposition comparisons and stating the results of these comparisons in terms of longer than, shorter than, the same as.

Identifying the relative weights of objects by hefting.

Identifying and ordering the relative volumes of containers of different shapes, when the differences are gross ones.

Distinguishing between two objects in comparative terms: longer, shorter; larger, smaller.

Construction of Test Items

Once this learning set hierarchy for each process is established a series of scaled items reflecting the behaviors of the learning set-processes are developed. For each scaled set of behaviors, a range of acceptable responses are developed so that the test administrator need not subjectively judge the correctness of the particular response. This strategy for instrument development also enables the test constructors to standardize the testing procedure as well as the test items. It is anticipated that the initial standardization will involve repeated administration during the next two years.

Each of the items contained in the learning set-process instrument can be related to a particular learning set in the constructed hierarchy.

Summary

Hence the development of the process instrument proceeds from the specification of objectives as observable performance, to the analysis of those behaviors into a learning set hierarchy, to the construction of items associated with the behavior identified for each learning set.

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TASKS OF EVALUATION IN AN EXPERIMENTAL COURSE

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With your indulgence, I will by-pass the topic as originally given to me. Instead of concentrating on the topic of educational objectives and evaluative instruments, I will take the liberty to share some thoughts on the tasks of evaluation as required by The Ohio State University project in the development of economics curricular materials. These ideas are not limited to this project but will have a bearing on the general theory and practice of curriculum evaluation.

The thoughts that follow represent an overview of the tasks in our project and they fall into four main headings: Economics as a Discipline; Preparation of Curricular Materials; Education of Teachers for the Tryout; and Tryout: Instruction and Learning. These headings represent aspects of our project needing evaluation. Under each, I propose to consider what needs to be evaluated and the manner in which evaluation in the usual sense can contribute, if it can contribute at all.

Economics as a Discipline

One set of ideas to be tested consists of assumptions about the nature of economics as a discipline. The basic assumption is that economics has a logic of its own, an inner structure, the major components of which are scarcity (including economic decisions); flows (of goods and services and of income); and coordination of economic activity (that is, of decisions and flows). These three major divisions of the subject, together with two analytical themes which run through the subject -- (a) marginal analysis and (b) the use of institutions -- comprise the structure of economics (Lovenstein, 1960).

Why all this attention to structure? Why must we seek out the basic structure of the subject? We assume that one does not really understand a discipline until its structure has been laid bare (its basic concepts and relationships revealed); that a subject is easier to learn then; and that it is also easier to teach. These assumptions, which are obviously related to teaching and learning, imply comparisons with alternative courses of instruction and thus require comparative evidence. They will be treated in detail later.

For the present, let us return to this composite assumption about the logic of the discipline of economics. It seems clear to me that the validation of this is properly left to the philosophers and economists; they are the ones who bear primary responsibility for the types of analysis and logical evaluation required. The contribution of evaluation, in the sense of the data-gathering phase of curriculum development, would be incidental here.

In passing, let me make a parenthetical comment about the derivation of educational objectives for a course based upon the logic of the discipline. The major objectives quite properly follow from the conception of the discipline as having a logic of its own. In our effort, the major objective for the student is to grasp this inner structure, to see economics as a unified and usable system of thought. Of course there will be other objectives but they will be auxiliary or subordinate to this.

A second assumption under this first heading is that educational philosophy and psychology can contribute to the ordering of content for a course of instruction. Our staff economist, Professor Meno Lovenstein, has drawn upon such philosophers as Whitehead and Dewey and upon writings in Gestalt psychology for guiding principles. From Whitehead, for example, he borrows the notion of overlapping sequences, "The Rhythm of Education," as one guide. According to Whitehead's conception, intellectual development goes through the stages of romance, precision, and generalization; and education should follow this order. Thus, in the proposed economics course, the first major family of ideas (scarcity) is introduced at the stage of romance and carried to the stage of precision, then the second major family of ideas (flows) is begun at the stage of romance and relies on the precision developed in the previous major family; finally, the third family of ideas (coordination) is introduced at the stage of romance, and the two previous families move to the stage of generalization as the third one also arrives at the stages of precision and generalization (Lovenstein, 1960, pp. 154, 156). From Gestalt psychology, for example, Lovenstein draws upon such principles as the law of closure for help in organizing economic concepts.

> "The law of closure states that an activity seeks an end-situation; that is to say, there is expectation that a pattern will be recognized and that this expectation and result should be taken into account. For the organization of economic concepts, the law of closure indicates that the concepts should be so arranged and treated that there are strategic end-situations or points of integration where the student will be rewarded with a recognition of pattern or form. It should not be expected that he would "see" economics but that he would be motivated

to that end by recognizing wholes within the analysis. An example would be a recognition of scarcity and economic decisions forming a thinkable unit (Lovenstein, 1960, p. 152)."

The checking of this second assumption, that educational philosophy and psychology can contribute, lends itself to logical analysis and judgment. Again philosophers and economists -- preferably teaching economists -- would play the major role.

Preparation of Curricular Materials

Another major aspect of our curricular project is the preparation of materials to be used for instruction. Clearly, whatever materials are produced should bear a close relationship to the conception of economics as a subject with an underlying logic of its own. One of the theoretical assumptions would be that the materials provide an orderly sequence of development, and another, that the problems in economics as seen by the experts can also be meaningful problems to students.

Preliminary evaluation of such materials will be made by certain of our staff, but especially by a small group of outside economics instructors who will serve as consultants. The evaluator himself can insist that parts of these materials, at the least, be tried out with individual students or small groups, in somewhat the manner in which programmed materials are developed. So, even at this stage, there can be some evidence-gathering.

Education of Teachers for the Tryout

As usual, the key persons in the tryout of new materials will be the teachers. It is almost certain that in this project they will need very careful orientation and education. They will need to be well grounded in the subject of economics as outlined for our purposes. These teachers, like their students-to-be, must also grasp and appreciate the inner structure of economics. To help them attain these ends, and to help them see how this structure can be used for more effective communication of economic concepts and reasoning, a Teacher's Manual is being prepared. This will be an important device in their preparation.

Really, before being allowed to go in the classroom to teach for us, these teachers should be pre-tested. An important part of the evaluation work in this project should be to ascertain that the teacher is prepared to carry out the course of instruction as conceived. It is not enough to place in the hands of teachers well-prepared materials of instruction; it must be assured that they will understand these materials and that they will be able to use them properly. This is a phase of our curriculum project, and of any such project, that cannot be left to presumption.

Tryout: Instruction and Learning

This is the aspect of our project where evaluation comes in to its own. Here, at last, comprehensive evidence will be gathered.

In what way will evaluation enter and what will it yield? To answer these questions, let us consider the major hypotheses underlying the teaching of these economics materials.

The first major hypothesis is this:

1. Through a process of "progressive inquiry," ninth-grade "students can reason their way into a comprehension of economics as a whole; the subject can be seen and remembered and used in full compass" (Lovenstein, 1960, p. 165). It is at once obvious that this is a rather complex hypothesis, one that contains statements of method as well as outcome.

Let us consider the components that refer to method. "Progressive inquiry" is used here in the sense that John Dewey used it -- as unfolding exploration, as the determining of a problem in such a manner that "the conclusions reached in one inquiry become means, materials and procedural, of carrying on further inquiries" (Dewey, 1938, p. 140). To quote our staff economist: "... there must be an effort to sense and reach for a concept, say, scarcity. Then inquiry will extend its dimensions and step by step, always step by step, the students will explore the ramifications of the emerging notion" (Lovenstein, 1960, p. 149). In this way, the linking of ideas will lay bare the inner structure of the discipline, and students will engage in processes of reasoning, discovery, and rediscovery.

Now, to this point, what is the task of evaluation? Since these statements refer to overt and covert activities in the classroom, it is clear that we will need to assure ourselves that these types of activity do take place. Do students actually engage in progressive inquiry? Do all, or at least most students actually discover the underlying ideas rather than only a few students who then declare these to the others? Do they actually think as an economist does? The appropriate evaluational procedures must surely include direct observation of classroom interaction, sound recording of teacher and student utterances, interviews with students, and the method of stimulated recall, as well as subsequent logical and psychological analysis of the information so gathered. In short, evaluation must determine the degree to which the instructional activities faithfully follow through on the theory for the course.

The other components of this first major hypothesis refer to desired outcomes: to see economics as a unified and usable system of thought; to remember the orientation, that is, "to keep alive and functional the systematic nature of economic analysis" (Lovenstein, 1960, p. 165); and to use the subject in its full compass. Here the tasks of evaluation are well recognized and you are familiar with them: namely, to assist in clarifying these desired outcomes, to develop further the specifications for tests and the like, to help construct tests, and so on. It is worth noting that the last two of the outcomes imply some attention to effects that persist beyond the course itself. The measurement of retention may be done, in part, at points throughout the course; for example, to see whether students remember earlier ideas that now come up for further consideration. So, too, with measurement of transfer to later situations in the course. But each of these types of outcome should be rechecked some months or years beyond the end of the course. Indeed, without any prompting from a psychologist who is familiar with such matters, our staff expressed a concern for such follow-up studies. Evidently there is here an implicit hope that this economics course will produce learnings that will carry over nicely into further work in the social studies, so that students, for instance, will "see" the economics in topics brought into American History.

The second major hypothesis underlying the theory of curriculum and instruction for this course seems to me to fall primarily in the affective domain. I would state it as follows:

Inquiry into economic concepts, as scarcity, is itself "the problem" in the Dewey sense and will prove to be highly motivating. Again, to quote our staff economist:

> "As the concept... of scarcity emerges, it in itself becomes the problem and a fuller understanding of its nature and implications becomes the problem-solving. Thus the student is directed at analysis itself. The students become interested because familiar experiences are now seen with new meanings. Because of the technique of conscious linkage and continuous review, student motivation arises from comfort and orientation, not merely from vicarious interest-catching illustrations" (Lovenstein, 1960, p. 155). Thus, "The motivation of students arises from being able to follow, step by step, how one economic notion leads to the next, in a continuous unfolding of analysis" (Ibid. p. 162).

It is hypothesized, in other words, that this kind of activity will generate motivation. It is also implied that students will accept abstraction rather than be intimidated by it.

Once more, therefore, evaluation will be called upon to delve into the meaning of the students' experiences. Will ninth-grade students be highly motivated by such a course? Will they feel comfortable with it? Will they accept abstraction and show an interest in economics as a "discipline"? I leave it to you to speculate about the techniques that might be used to probe such private phenomena.

As though all of this were not enough for evaluation to do, we are then confronted with occasional subtle questions posed by the curriculum developers -- in this case, our own staff economist and the social studies specialist. All of you, I think, at some time have encountered examples of the mathematical representations used so frequently in economics teaching materials -- supply and demand curves, for example, or cost curves. Our economist asks whether this mathematics is an essential part of economics. Could the subject be taught without all this statistical implementation? We don't really know. Questions such as these indicate gaps in our psychological knowledge. While they set a challenge for specialists in learning, they also tend to implicate the evaluator as well.

Some of you may be curious as to whether we plan to compare our experimental course with more conventional courses, perhaps to the point of sponsoring a conventional course at the ninth-grade level. The answer is No. The reason is partly a matter of practicality: we have our hands full with this one.

Some of the assumptions previously stated do imply the need for comparative data. Economics is expected to be better understood; easier to teach; easier to learn; easier to apply. It would seem that we would ultimately have to compare our course with the conventional, at least to convince the skeptics. I am not sure that this will be necessary. I keep telling my associates that our job is to accept the theory of the course as a given, and to see how far ninth-graders can move toward the objectives. That in itself would be a worthwhile contribution to educational research.

If you look more closely at the effects to be compared, you may appreciate that these effects are not so readily comparable. We say that "it" -- economics -- will be better retained. But what is the "it"? Surely not the same economics in our experimental course as in a conventional. The ideas will surely differ somewhat, and the cognitive frameworks in which they are embedded surely every bit as much and probably much more. It would seem that we are trying to compare outcomes that are somewhat incomparable. The economics that will be retained will depend so much upon the economics that was taught. Perhaps what we have in the end is a choice between different kinds of outcomes. If experimental course X can be shown to produce certain degrees of outcomes A, B, C, with a defined group, and course Y can be shown to produce certain degrees of outcomes L, M, N, also with a similar group, then the real choice is between the values of these outcomes -- a "values" question in its own right.

By way of a brief concluding statement, I would underscore the fact that evaluation will be called upon in our experimental project, and I am sure in yours, to check the project in more ways and at more points than has been usual in the past. Our concern with the testing of assumptions on teaching and learning activities indicates that we are expecting evaluation to do more than describe outcomes. We are also expecting it to relate these outcomes to antecedent conditions. We are, in other words, expecting evaluation to explain the outcomes on the basis of the conditions that produced them. In this respect, then, we are functioning as educational scientists.

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INNOVATIONS IN EVALUATION FOR INNOVATIONS IN CURRICULUM

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The papers of this conference describe some very exciting and useful work going on in evaluation of real, live curriculum projects -- both Ed Furst and Henry Walbesser have given us enough solid and new stuff to chew upon and to enjoy for quite a while. Walbesser's insistent point of "say it in terms of operation or behavior on the part of the student (the examinee)" is important and should not be forgotten in our inventiveness with new tests. We have the opportunity of hearing from Hulda Grobman about some of the practical problems -- and solutions -- in evaluation of one of the largest of the established curriculum projects, and one which has done much in evaluation.

My assignment is to take a somewhat different tack: to speak to some of the possible areas needing "new" approaches in evaluation -- some innovation in evaluation to match the important innovations in the many, sparkling curriculum projects. Anyone who has the gall to take on such a topic in discussion with a group made up of experimentalists, psychometricians, measurement experts, psychologists, and bright people practicing evaluation should have the sensitivity to apologize for imagining that he can do more than learn about "innovations" from the group. Consider the apology made, but please bear in mind that I am merely trying to reflect some of the ideas in the journals and among my colleagues concerning approaches in order to get discussion started.

Unfortunately, in the minds of many school people, curriculum developers, and "evaluators" the words educational evaluation have come to be synonymous with "paper-and-pencil" tests for end-of-course or end-of-unit uses. I recognize that both Furst, Walbesser and Grobman gave us examples which go beyond this, but I still believe that the weight of intent in evaluation deals with the narrower concept. In part, my strong feelings on this are brought about by the fact that a group of us from several departments at the University of Illinois have organized recently a Center for Instructional Research and Curriculum Evaluation to work with schools and new curriculum projects. We would have liked to shorten the title of the new Center (although the initials of the full title -- CIRCE -- make a useful name with delightful implications!), but we found that "curriculum evaluation" alone meant testing whereas "instructional research" did not carry to many the notion of evaluation. We firmly believe that evaluation of new curricular methods and materials should involve testing -- in the traditional sense; research -- including laboratories, computer-based teaching machines, and classrooms; and studies of dissemination of the innovations -- what sorts of schools and teachers use which innovations with what kinds of modifying effects.

Those of us in testing, evaluation, and instructional research (the three categories are becoming less and less differentiated, but using the three allows for individual taste in self-perception!) have today, as never before, an opportunity to do two things:

1. Play a constructive part in the current ferment of curriculum innovation. High intelligence from the so-called subject areas is playing a part -- a large part. We can attempt to play the role of the "Good Housekeeping Magazine Stamp of Approval": or we can play that of hastening, improving upon, and consolidating the functional innovations in instruction.

2. Discover and invent things about testing, evaluation, and behavioral data-collection which will move our field ahead -- this as opposed to replaying the record of known techniques of test-construction and objective-delineation.

These opportunities assume that the "new curriculum games" are aimed at improvement (efficiency) of the education of pupils and students. Most are. Only a few are aimed merely at entertaining the innovator -- and even then we may want to see what the innovations do to children (or should I say "the other children"!).

Each of us here probably has been asked, as an "evaluator," a question such as "Which of these (math, English, shop) programs is better -- or best, depending upon the degree of multiplicity -- for eighth grade?" or, even more common, "Will you help us with the evaluation of this curriculum project so that we will know whether or not it is O. K. ?" Or, if this experience has not been your lot, you have operated with projects in which the same end was implicit in the design, the hypotheses, and the instruments used. In any case, the focal purpose is all too clearly that of approving or disapproving -- perhaps comparatively -- the curriculum. In the last few years there have been a number of suggestions from operating school people -- and also from some curriculum-project directors -- that evaluation centers should be set up separately from developmental projects in order to have "unbiased certification" of materials and programs prepared for the schools. The idea of lack of bias is not a bad one (and I hope that one or two of you continue to avoid bias), but the idea of certification is at least premature.

If the question is changed to one that sounds like "Do these materials, presented in this way, by this teacher, with this student result in behavior X?," then we are almost in a position of doing something about it. Change the word this to this kind of (i.e., method, teacher, student) and we are another step ahead. Even then, if we want to play the role of innovator-helper, we have responsibility for suggesting types. This probably means that we need to spend much more time in the classroom -- absorbing the material, observing teacher and student, and trying out various hunches. Most of the curriculum innovators are doing just this sort of thing in developing the materials. We need to be more involved in the same game.

The very newness of most of the ventures suggests that we need to involve "behavioral" specialists from several areas -- developmental, learning, motivation and emotion, social-psychology -- not merely the specialist in test development and the psychometrician. I say this with full knowledge that some few of you are working with such complex groups now, but I am afraid the most common notion of "evaluating" the curriculum materials has been pictured in terms of test expert and of precise (or nearly precise) measures.

These notions of helping the innovator innovate, of attacking the big problems of meaningful change with a team of behavioral specialists, of "playing at hunches" instead of allowing fear of lack of precision (psychometric) to make us accountants lead into the second area of opportunity which I mentioned.

If we are to move things ahead in the sampling of behavioral outcomes as well as in curriculum change, some of us may have to decrease our immediate regard for objective scoring, KR_{20} reliability, and the possibility of publishing the "paper instrument."

A pretty good job has been done and is being done from the standpoint of objectivity, precision, and quantification in the area of recall and recognition. Good progress is apparent in the somewhat more complex behaviors of new applications of principles, of ability to analyze sets into components. The "Tab Test" devised by Glaser, Damrin and Gardner (1954) and its recent adaptation to medical education (McGuire, 1963) have moved us ahead. But many of today's curriculum projects are deeply concerned with such things as attitudes, preferences among cognitive methods, and taste. Ella Leppert -- and many others in the social studies areas -- see the *sine qua non* of outcomes as a person whose attitudes allow for changes in social structures in response to new problems. Our physics and mathematics innovators see the alteration of cognitive preferences as an important part of purpose in their areas. The specialists in English count heavily upon developing taste as well as precision in the use of language. Measures of such objectives are less easily developed than are recall-recognition outcomes.

Certainly, we have had developments along this line. There have been some very useful break-throughs. The work of Robert Heath (1964) on cognitive preferences in connection with the PSSC curriculum is exciting. I, for one, would like to see Heath's basic idea transferred to social studies and English. Leonard Cahen, at Stanford, is doing some research using "simulated decision-making"* with elementary teachers -- stuff which currently looks important and transferable. Benjamin S. Bloom, at the University of Chicago, has been looking for some time at instructional process and method through stimulated recall. The method should be good not only for the usual classroom situations but for information about what goes on with panelists in the student-panel situation in English and social studies. The semantic differential scales developed by Charles Osgood and his associates (Osgood, Tannenbaum and Suci, 1957) show promise of being applicable to tapping certain behaviors implied in a number of science curricula.

Some of the attitude tests are indeed clever in playing down social-approval bias and playing up scaling. But in general we have stuck with verbalization and with a form of behavior which represents "can do" instead of "does do." We obtain from our instructions a result which says he can attack problems this way. But does he do it this way outside of the box in which we test him? He can express the attitude in this setting, but does the attitude affect his operations outside of the test setting?

We are in a position either of demonstrating that taste, attitudes, and cognitive preferences are meaningless in terms of education or of devising ways of locating the lines of change.

We need to spend more of our time and the ever-greater flow of money on observation techniques, collection of products produced outside of our "boxes," and structured interviews. In the beginning such approaches will lack some of the qualities we like: precision, objectivity, countability. Think what you might do with some one of your knotty problems of locating signs of a given behavior if you could live with a small group of the students in a given program until you "really knew them." It sounds clinical, yes, but it might beat a current trend toward using the increased dollars merely to buy more subjects for the same tests.

In very few instances have the people in measurement used situational tests in evaluating the new curriculum efforts. The type of approach that might be pushed is illustrated in the Social Relations Test, which was developed a few years ago by Dora Damrin (1955). It was designed to throw light on the nature and quality of children's skill in social relations. Curriculum innovators, if merely pushed to state the outcomes they expect, may not think in terms of group interaction -- they have not been trained to do that. We, as evaluators, have a responsibility to suggest the various possibilities and to reach out for new ways of generating behavioral data.

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The following several paragraphs are intended to be illustrative of the sorts of things over and beyond traditional testing that seem to me to be the responsibility of the persons in evaluation in working with today's curriculum developments.

How can valid achievement tests be devised for young children? Several projects are engaged in teaching significant subject matter, particularly in science, to primary pupils. Achievement tests for these grades have hitherto been confined to fundamental skills or to rather simple associative knowledge. To develop items that measure, for example, the child's mastery of the concept of force will require techniques that overcome the child's immaturity in reading, inability to express himself, and lack of test "wiseness". We anticipate that general insights into achievement testing can be gained by adapting techniques from Piaget, from Keislar, and from other researchers in child development. It is typical of our thinking that this is described under general research. It could be pursued as a "service" to an elementary science curriculum study, but to extract general understanding of how to evaluate goes beyond the service function.

How can "savings" be measured in an educational context? What instruction produces greatest savings? A principal claim for teaching a unit in (say) health is not that the subject matter taught is significant but that it generates ability to understand health information. (For health information, substitute economic data, case histories in medical education, or the experimental bases for quantum theory.) There is considerable evidence of transfer obtained by a test in which a simple example of material not studies is placed before the student and his comprehension tested. But psychologists have distinguished for sixty years between retention as measured by recall and as measured by savings in learning. The two are not the same, and it may well be that the instruction that brings one to a maximum is not at all the one best suited to maximize the second. A precisely parallel question can be asked about transfer: Do short-term applications of knowledge represent the same outcome as ability to work through a complex problem in reduced time?

The first step in attacking this problem is to devise tests of savings that can be used in connection with meaningful instruction. Specifically, one might ask whether BSCS students are better able to learn about water transfer in plants -- a topic not studied in the course -- than students of conventional biology or students who have taken another science. This will require some new research designs; one promising prospect that has already been employed by Suppes and by Gagne is to use a programmed unit as a teaching-and-testing device.

What is the role of verbalization in instruction? Specifically, how much should a student be told about a process or asked to verbalize his own observations? At one extreme we have the claims of Hendrix (1954) to the effect that verbalization is often detrimental; at the other, both data and common observation confirm that verbal communication facilitates performance. What is needed are studies with various types of instructional material, including meaningful material with an internal logic, that can define the proper place (a) of discovery versus tutelage (b) within discovery, of pupil verbalization versus nonverbalization. Recent studies at Illinois have entered this area, with special concern for methods of identifying insight without requiring the student to verbalize. These methods, explored in theses by Azuma, Mattson, and Avner, need to be extended from the present simple material to more significant material.

A considerable number of other isolated experiments have been reported which deal with the effects of such variables of instruction as sequence of topics,* personality and intellectual structure (Dienes, 1959), and organizers (Ausubel, 1960). Dimensionality and cognitive similarity between pupil and teacher are also germane here (Runkel, 1956; Runkel and Damrin, 1961). These studies have demonstrated the value of applying the techniques of experimental psychology in studying ways of teaching particular ideas -- as contrasted with experimental studies that encompass many weeks of instruction or even an entire course. A much greater degree of control over conditions affecting learning can be achieved with this particularized approach (and with some forms of programmed instruction) than with a long-range study.

What are the effects of incomplete tasks on the retention and transfer of learnings? Zeigarnik found, perhaps in contradiction to earlier beliefs, that what is remembered longest is the task that remains incomplete. With reference to the Gestalt principles of closure, she indicated that the learner's failure to assimilate or restructure the lesson results in a mobilization for forces for continued attack on the problem and a sustained recollection of it. Briggs and his colleagues at the American Institute for Research (Briggs, _et al._, 1962) found better performance by learners _not_ writing responses to autoinstructional programs and not being reinforced with exposure to the correct response. They suggested that this better achievement might be attributable to the Zeigarnik effect. Is it to be concluded that learners should be brought up to the solution or assimilation of a problem but prevented from accomplishing that end? Perhaps it will be found that the utility of the Zeigarnik effect on instruction depends on the degree to which the objective of learning is awareness of and contact with the problem, as opposed to awareness of an accomplishment of its solution.

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* Suppes, P. _On the Behavioral Foundations of Mathematical Concepts._ Stanford University, 1962. (mimeographed)

Finally, concerning this point of using the new curriculum developments to improve evaluation -- as well as curriculum materials -- my plea is not for doing away with psychometrics, precision, large N's, and "can do" measures. Thank heavens for the forward strides in these things over the past twenty-five years and the new break-throughs today! My plea may be stated as "Let's spend more time and money on the real outcomes of education -- even though loosely done -- and look for the correlates later rather than tackling the objectives which are measurable by our traditional evaluation-testing methods."

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Appendix A

LIST OF ATTENDEES

CURRICULUM STUDY CENTER CONFERENCE

Carnegie Institute of Technology
May 8-9, 1964

Richard Alm
University of Hawaii

Wilfrid C. Bailey
University of Georgia

Wayne Booth
University of Chicago

Dwight L. Burton
Florida State University

Leonard Cahen
Stanford University

Clinton I. Chase
Indiana University

Fred S. Coombs
University of Illinois

Richard Corbin
Hunter College High School

Peter Dunn-Rankin
Florida State University

Edwin Fenton
Carnegie Institute of Technology

Gordon Fifer
Hunter College

Warren Findley
University of Georgia

John Fisher
Modern Language Association
New York University

Garlie A. Forehand
Carnegie Institute of Technology

Edward J. Furst
The Ohio State University

William E. Gardner
University of Minnesota

John Good
Carnegie Institute of Technology

Hulda Grobman
University of Colorado

Jean H. Hagstrum
Northwestern University

Merrill Hartshorn
National Council for the Social Studies

J. Thomas Hastings
University of Illinois

Robert Heath
Educational Testing Services

Robert Hogan
National Council of Teachers of English

Francis Ianni
U. S. Office of Education

Oscar Jarvis
University of Georgia

William Jenkins
University of Minnesota

Edward B. Jenkinson
Indiana University

F. C. Johnson
Columbia University

Stanley B. Kegler
University of Minnesota

Rodger Leigh Kemp
University of Minnesota

Albert R. Kitzhaber
University of Oregon

Paul Klohr
The Ohio State University

John Lee
Northwestern University

Ella C. Leppert
University of Illinois

Meno Lovenstein
The Ohio State University

Howard Mehlinger
Carnegie Institute of Technology

James Miller
University of Chicago

Arthur Mittman
University of Oregon

Gordon Neisser
Harvard University

Fred M. Newman
Harvard University

William T. Ojala
Florida State University

Donald W. Oliver
Harvard University

Paul A. Olson
University of Nebraska

Robert C. Pooley
University of Wisconsin

Frank M. Rice
University of Nebraska

Marion J. Rice
University of Georgia

Wade Robinson
U. S. Office of Education

Vincent Rogers
University of Minnesota

Malcolm Searle
National Council for the Social Studies

Douglas Sjogren
University of Nebraska

Robert C. Slack
Carnegie Institute of Technology

Marjorie B. Smiley
Hunter College

Gerald Smith
Syracuse University

Erwin R. Steinberg
Carnegie Institute of Technology

Rachel S. Sutton
University of Georgia

Mary S. Tingle
University of Georgia

Henry Walbesser
American Association for the Advancement of Science

Edith West
University of Minnesota

William H. Wiatt
Indiana University

Marguerite Wilke
Hunter College

Appendix B

PROGRAM

CURRICULUM STUDY CENTER CONFERENCE

Margaret Morrison Carnegie College
Carnegie Institute of Technology
May 8-9, 1964

Friday, May 8

Location: Skibo, campus activities center: Wherrett and Highlander Rooms, Rooms 40 and 46

English and Social Studies

The English group will meet in the Wherrett Room; Social Studies in Room 40, on the ground level.

Time	Separate mtgs. of Eng. & Soc. Studies people	Joint mtgs. of Eng. & Soc. Studies people	Topic
9:30-10:00		X	Welcome; arrangements
10:00-12:00	X		Exchange of information: papers and discussion
12:00- 1:30		X	Lunch - Highlander Room, Skibo
1:30- 3:20	X		Exchange of information: papers and discussion
3:20- 3:30		X	Coffee break - Lobby, Skibo
3:30- 5:00		X	Establishing and maintaining communication among the Centers - Breed Hall

Evaluators

When the English group and the Social Studies group are meeting separately, the evaluators will join whichever of the two groups is of the greater interest to them. When the English group and the Social Studies group are holding joint meetings, the evaluators will hold separate meetings of their own, as indicated below:

Time and Location	Topic	Speaker or Discussion Leader
3:30- 5:00	"Educational Objectives and Evaluation Instruments"	Edward J. Furst Ohio State University
Room 46, Skibo	"Translating Behavioral Objectives into Evaluation Instruments"	Henry J. Walbesser American Association for the Advancement of Science
	Discussion	Garlie A. Forehand Carnegie Institute of Technology

Saturday, May 9

Location: Margaret Morrison Carnegie College, Rooms 17 and 127; Breed Hall, Room 303

English and Social Studies

The English group will meet in Room 17; Social Studies, Room 127

Time	Separate mtgs. of Eng. & Soc. Studies people	Joint mtgs. of Eng. & Soc. Studies people	Topic
9:15-10:20		X	Turning a Curriculum Study Center into a Demonstration Center - Breed Hall
10:30-12:00	X		Exchange of information: papers and discussion
12:15- 1:30		X	Lunch, Faculty Dining Room, Skibo
1:30- 3:20	X		Exchange of information: papers and discussion
3:20- 3:30		X	Coffee break - Student Lounge, MMCC
3:30- 5:00		X	Problems of publishing

Evaluators

Time and Location	Topic	Speaker or Discussion Leader
9:15-10:20	"Test Construction for Curriculum Evaluation"	J. Thomas Hastings University of Illinois
Room 303, MMCC	Discussion	Garlie A. Forehand
3:30- 5:00	"Experience in the Evaluation of the Biological Sciences Curriculum Study"	Hulda Grobman University of Colorado
Room 303, MMCC	Discussion	Garlie A. Forehand